United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Tennessee Agricultural
Experiment Station,
Hickman County Board of
Commissioners, and
Tennessee Department of
Agriculture

Soil Survey of Hickman County, Tennessee

How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

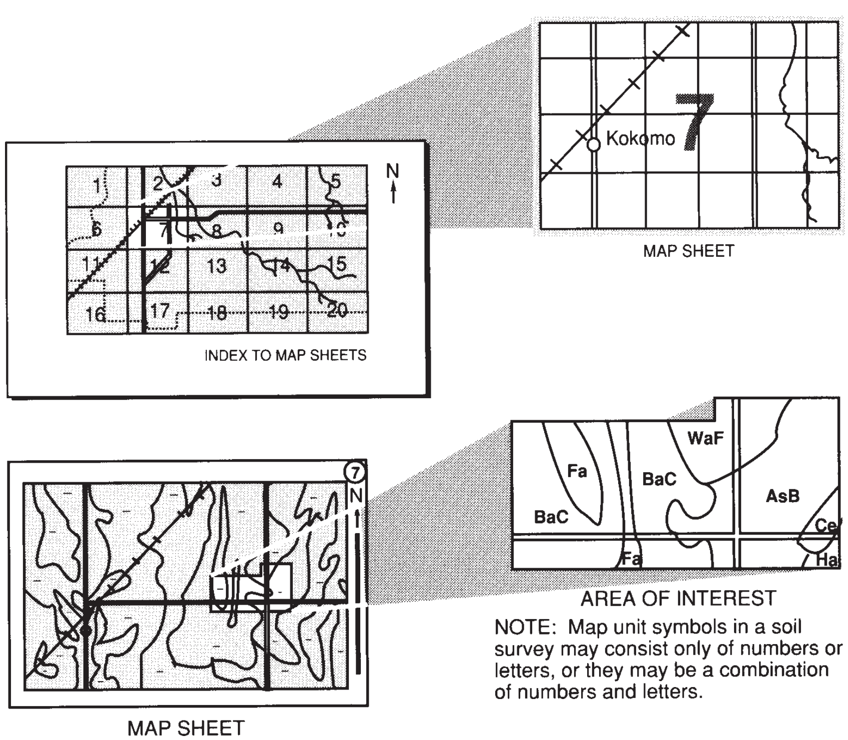
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and go to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Go to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1994. Soil names and descriptions were approved in 1996. Unless otherwise indicated, statements in this publication reflect conditions in the survey area in 1994. This survey was made cooperatively by the Natural Resources Conservation Service, the Tennessee Agricultural Experiment Station, the Hickman County Board of Commissioners, and the Tennessee Department of Agriculture. It is part of the technical assistance furnished to the Hickman County Soil Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: The Pace Bend on the Duck River. Important agricultural soils are along the bends of the Duck River in Hickman County.

Additional information about the Nation's natural resources is available online from the Natural Resources Conservation Service at http://www.nrcs.usda.gov.

Contents

Issued 2008

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help land users identify and reduce the effects of soil limitations that affect various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

James W. Ford
State Conservationist
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Soil Survey of
Hickman County, Tennessee

By Douglas F. Clendenon, Natural Resources Conservation Service

Fieldwork by Douglas F. Clendenon, David W. Thomas, Rodney J. Creel, Jennifer L. Cooper, and Jennifer W. Chastain, Natural Resources Conservation Service, and John G. Gibi and James A. Cotton, Private Consulting Soil Scientists

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
Tennessee Agricultural Experiment Station, Hickman County Board of Commissioners, and Tennessee Department of Agriculture

HICKMAN COUNTY is in the west-central part of Tennessee (fig. 1). Its region is generally very hilly and has narrow creek bottoms. Hickman County is bounded on the north by Dickson County, on the east by Williamson and Maury Counties, on the south by Lewis County, and on the west by Perry and Humphreys Counties. Hickman County has a land area of 390,100 acres, or about 610 square miles. Centerville, the county seat, is about 30 miles northeast of Columbia and about 50 miles southwest of Nashville. In 1990, according to the census, the population of the county was 16,754 and that of Centerville was 3,616.

General Nature of the County

This section gives general information about Hickman County. It describes history and development, industry and transportation, natural resources, physiography and geology, and climate.

History and Development

Hickman County was established by an act of the Tennessee General Assembly in December 1807 *(3)*. The county was named in honor of Edwin Hickman, a member of a survey party. Hickman was killed in a skirmish with Indians near the mouth of Defeated Creek.

Vernon, about 10 miles north of Centerville, was named by a legislative act as the original county seat. It was named in honor of Mount Vernon, Virginia, the home of George Washington. Vernon became an important early town in the middle part of Tennessee. It was located on the old Reynoldsburg Road, which connected Nashville and Reynoldsburg on the Tennessee River. Reynoldsburg was considered a possible State capital.

Hickman County originally encompassed what are now Hickman, Lewis, and Lawrence Counties and parts of Humphreys, Perry, and Wayne Counties. Within a few years after establishment, the size of the county had been reduced by the formation of several adjacent counties. After the Indian Treaty of 1818, settlers migrated across the

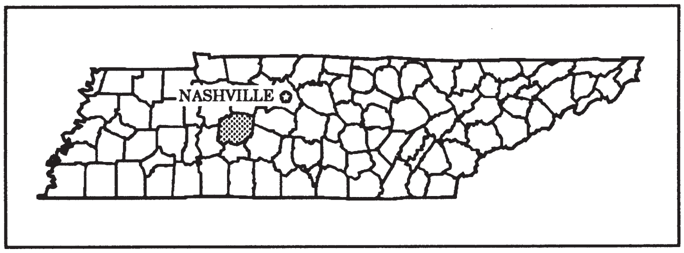

Figure 1.—Location of Hickman County in Tennessee.

Duck River as the population grew. In 1823, the county seat was moved to Centerville. At that time Davey Crockett, the famous frontiersman and statesman, represented Hickman County in the Tennessee House of Representatives.

Industry and Transportation

The first industry in Hickman County was an iron smelting operation on Mill Creek in 1814 *(7)*. Iron furnaces included a furnace on Mill Creek, near Graham; Goodrich, Lee, and Gould Furnace on Sugar Creek; and Aetna Iron Works at Aetna. In the early 1800's timber was used in making charcoal for iron furnaces and in building the railroad.

Since early in Hickman County's development, agriculture has been a major economic enterprise. Corn, soybeans, and wheat continue to be grown on the fertile alluvial soils along the Duck River and its tributaries. Livestock consists mainly of beef cattle and hogs. Livestock has steadily gained in economic importance in the county. Small herds of sheep and goats and such exotic animals as emus and ostriches are also important.

Since the early 1940's industry has played an important role in the economy of Hickman County. Some 20 industries are located in the county. The largest factory has about 600 employees. Industries in Nashville and Columbia employ a substantial number of county residents. Most residential development is in the county's northeastern part, which is within a reasonable commuting distance of Nashville *(8)*.

Interstate 40 runs from Nashville to Memphis and bisects the northwest corner of Hickman County. Tennessee Highway 100, which runs northeast-southwest, and Tennessee Highway 50, which runs east-west, intersect in Centerville. The Natchez Trace Parkway runs from Natchez, Mississippi, to Nashville, crossing the southeast corner of the county. A branch of the South Central Tennessee Railroad runs through the middle of the county *(8)*.

Natural Resources

Soil is an important natural resource in the county. It is the growing medium for such marketable products as row crops, hay, livestock, and timber.

In most of the county water is adequate both for domestic use and for watering livestock. The major sources of water are springs, wells, ponds, streams, and the Duck River. Many streams and ponds provide excellent habitat for aquatic wildlife, opportunities for recreation, and sources of livestock watering (fig. 2). A few streams support rainbow trout.

Limited deposits of iron ore, mostly limonite, are on crests and side slopes of some ridges commonly in the northern half of Hickman County. Many of these deposits have been mined and abandoned.

The lower elevations, generally along the high stream terraces of the Duck River

Figure 2.—Scenic streams are important natural resources in Hickman County. Soil conservation practices are essential in maintaining good water quality.

and its major tributaries, have reserves of both blue and brown phosphate. Several areas, mainly south and east of Centerville, have been mined and reclaimed.

Limestone has been quarried and used as agricultural lime, flux in iron making, highway aggregate, dimension stone for walls and structures, and fill at building sites. Abundant reserves of limestone and chert are available for use as roadfill and subgrade material in transportation. Most secondary roads in Hickman County are surfaced with chert gravel.

Dense beds of water-rounded gravel occur in river valleys and on hills bordering the Duck River. Gravel has also been quarried from borrow pits on the upper slopes of hills. It is available in quantity for use in construction and transportation.

Sand occurs in many alluvial deposits near streams. Washed and sieved sand is suitable for local use. *(4, 5, 6)*.

Physiography and Geology

Hickman County lies almost entirely in the western part of the Highland Rim. A small area in the southeast part of the county, near Shady Grove, lies in the Outer Nashville Basin. The average upland elevation is about 950 feet above mean sea level in the southeastern half of the county. Elevation decreases somewhat to the northwest. In most areas local relief consists of narrow, rolling ridges and steeply dissected hillsides. A few, broad, undulating uplands are mainly in the northeastern section of the county.

River valleys are generally V-shaped, narrow, and winding. The Duck River is the largest in the county. It meanders southeast to northwest through the middle of the county. It has an average elevation of about 450 feet. Normal flow is moderate in summer and fall. Flooding is frequent in winter and spring. Most uplands, except a very small area in the northeast corner of the county, are drained by the Duck River and its tributaries. Terraces underlain by alluvial gravel occur up to about 250 feet above the

level of the Duck River. Soils that formed in alluvium of the Duck River are dominantly well drained, loamy, and very deep to bedrock. The alluvial soils on flood plains and low stream terraces have a considerable phosphate content because of phosphatic limestone in the watershed.

Away from the Duck River, alluvial soils have washed from the less fertile soils of the cherty hills of the Highland Rim. Even though the natural fertility of these soils is commonly lower, they are important for agriculture. The content of gravel is variable and commonly moderate or high. Because flooding in these areas is less frequent and of shorter duration than flooding in the Duck River Valley, it causes less crop damage.

The geologic strata exposed in Hickman County extend from the Tuscaloosa Formation, the most recent, to the Hermitage Formation, the oldest. The Tuscaloosa Formation caps many of the highest ridges in parts of the county; however, it is mostly in small, isolated areas. It consists mainly of rounded chert gravel and ranges from 0 to 50 feet in thickness. It is commonly intermixed with residuum derived from St. Louis and Warsaw Limestones.

St. Louis and Warsaw Limestones underlie much of the higher parts of the county, particularly in the north and east. They have weathered to a thick mantle consisting of residual chert and soil. These limestone formations are rarely seen except in road cuts and as outcrops along slope shoulders. A silty mantle, presumably loess, caps the ridges in these areas. It ranges in thickness from several inches to 2 feet or more. The resulting soils are very deep to bedrock; their texture ranges from silty to clayey with variable amounts of chert fragments.

These formations are underlain by chert, silicastone, and siltstone of the Fort Payne Formation, which ranges from about 20 to 250 feet in thickness. The Fort Payne Formation is well exposed throughout the county on steep hillsides and narrow, winding ridges. The soils in these areas are loamy and moderately deep and have numerous chert or siltstone fragments.

Below the Fort Payne Formation is black Chattanooga Shale, which is known for its carbonaceous content, oil-bearing strata, and, recently, radon gas. Blue phosphate has been quarried in several locations at the base of the shale. The limestones of the Brownsport Formation are exposed in the extreme western part of the county but are not exposed eastward. Limestone and shale outcrops of the Wayne Formation and a few local exposures of Brassfield Limestone are east of Coble. The phosphatic limestones are exposed in stream valleys east of Centerville. They include Leipers, Catheys, Bigby, and Hermitage Limestones. Soils that formed in limestone commonly have a clayey textured subsoil and range from shallow to very deep. Soils that weathered from phosphatic limestone have a significant phosphate content *(9)*.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Centerville, Tennessee, in the period 1951 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 39 degrees F and the average daily minimum temperature is 26 degrees. The lowest temperature on record, which occurred on January 21, 1985, is -26 degrees. In summer, the average temperature is 75 degrees and the average daily maximum temperature is 89 degrees. The highest recorded temperature, which occurred on August 16, 1970, is 103 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 52 inches. Of this, 20 inches, or about 38 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 12.08 inches. The heaviest 1-day rainfall during the period of record was 5.66 inches, recorded on November 27, 1973. Thunderstorms occur on about 53 days each year, and most occur in summer.

The average seasonal snowfall is about 5 inches. The greatest snow depth at any one time during the period of record was 10 inches. On average, 1 day of the year has at least 1 inch of snow on the ground.

The average relative humidity in midafternoon is about 57 percent. Humidity is higher at night, and the average at dawn is about 84 percent. The sun shines 61 percent of the time possible in summer and 44 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 10 miles per hour, in spring.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that

they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Soil Map Units

The general soil map shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils and some minor soils. It is named for the major soils. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Dominantly Sloping to Nearly Level Soils on Stream Terraces, Footslopes, and Flood Plains

These soils make up about 23 percent of the survey area. They formed in alluvium or colluvium. They are excessively drained to moderately well drained.

1. Pickwick-Armour-Arrington

Very deep, well drained, nearly level to sloping soils; on stream terraces and flood plains

This map unit consists of soils in the Duck River Valley (fig. 3). The valley bisects the county in a northwesterly direction. It has a relatively narrow flood plain and broader stream terraces. Commonly, each river bend has at least four terrace levels. Slope dominantly ranges from 0 to 12 percent but is steeper on soils of minor extent.

This unit makes up about 9 percent of the survey area. It is about 28 percent Pickwick soils, 20 percent Armour soils, 18 percent Arrington soils, and about 34 percent soils of minor extent.

Of minor extent in this map unit are Barfield, Biffle, Hampshire, Dellrose, Gladdice, and Mimosa soils on hillsides; Egam, Lindside, Norene, and Woodmont soils on flood plains; Paden and Humphreys soils on stream terraces; and Minvale soils on footslopes and stream terrace escarpments.

Pickwick soils are on the intermediate and highest terrace levels. They formed in alluvium. They are gently sloping or sloping. They are strong brown and yellowish red and medium textured in the subsoil. They become red and clayey in the lower part of the subsoil.

Armour soils are on the first terrace level just above the flood plain. These soils formed in alluvium. They are nearly level to sloping. They are strong brown, medium textured, and inherently high in phosphate content in the subsoil.

Arrington soils are on flood plains. These soils formed in recent alluvium. They are nearly level. They are dark brown, medium textured, and naturally high in phosphate content.

About 85 percent of this map unit is cleared. Armour and Pickwick soils are commonly in grass or mixed grass-legume forages for use as pasture or hay. They are

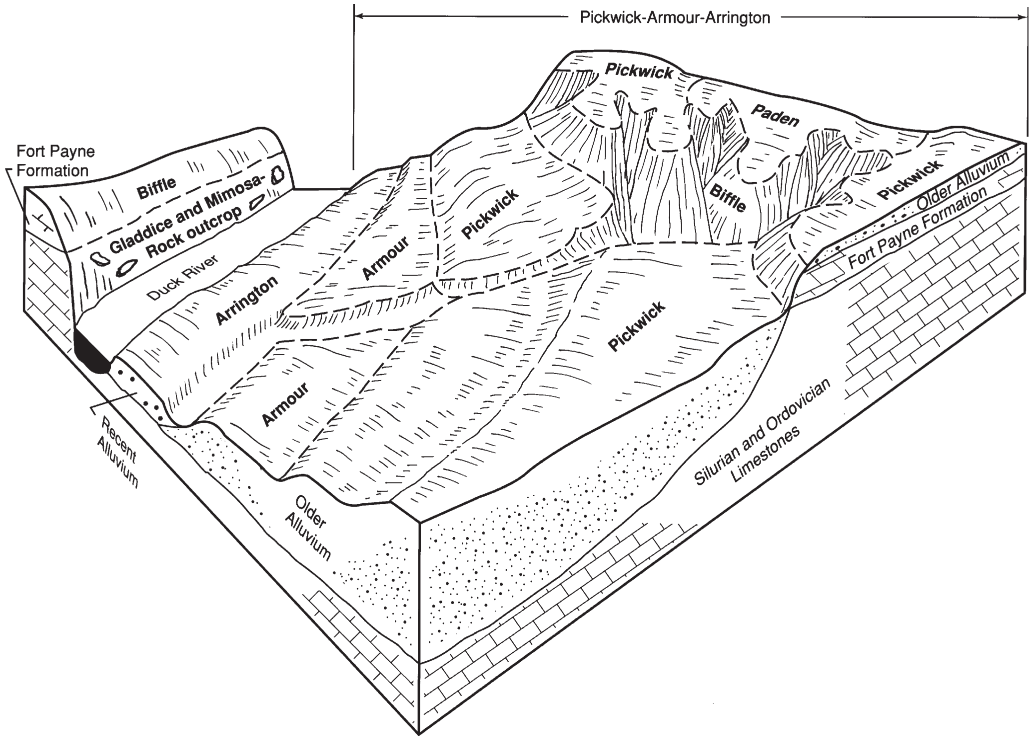

Figure 3.—Pattern of soils and parent material in the Pickwick-Armour-Arrington general soil map unit along the Duck River.

also used for corn, soybeans, wheat, and tobacco. Arrington soils are mainly used for corn and soybeans. In some areas they are used for grazing and hay production. Several inactive phosphate strip mines are in this unit. The reclaimed areas are used as pasture. This map unit comprises much of the county's prime farmland. Some soils of minor extent on steeper slopes are woodland.

Most areas of Pickwick and Armour soils, unless severely eroded, are moderately suited or well suited to crop production. However, conservation measures are needed. Arrington soils are moderately suited to corn and soybeans, but flooding in winter and spring is a hazard. Areas of Armour and Arrington soils and some soils of minor extent commonly are high in phosphate content, which decreases the need for fertilizer. Pickwick, Armour, and Arrington soils generally are moderately suited or well suited to forage production.

The soils in this unit are moderately suited or well suited to timber production. Undulating areas of Pickwick and Armour soils have few limitations affecting residential and commercial uses. A few areas of the soils are underlain by cavernous limestone. Sinkholes or depressions tend to form in these areas. In these areas waste disposal systems can pollute ground water and sinkholes can continue to collapse. Arrington soils are subject to flooding, which is a severe limitation affecting urban uses.

2. Humphreys-Riverby-Tarklin

Very deep, excessively drained to moderately well drained, nearly level to sloping soils; on footslopes, stream terraces, and flood plains

This map unit consists of relatively narrow valleys in the Highland Rim (fig. 4). Drainage, which is dendritic, consists of the primary and secondary tributaries of the Duck River. Slope dominantly ranges from 0 to 12 percent.

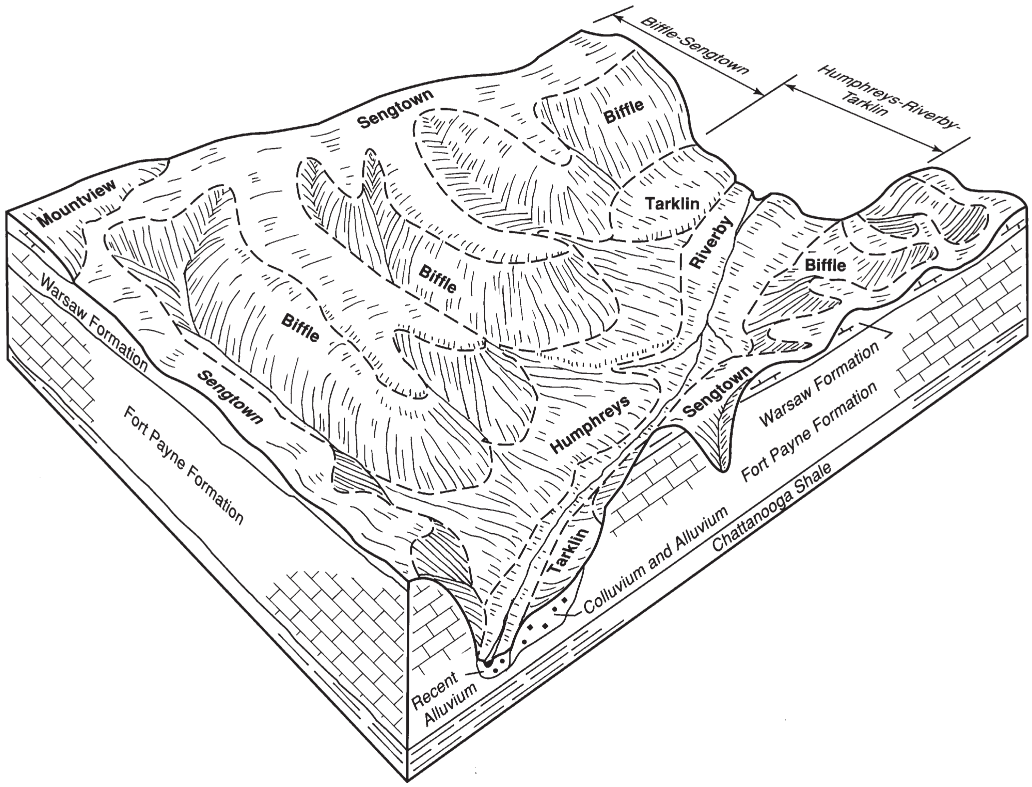

Figure 4.—Pattern of soils and parent material in the Humphreys-Riverby-Tarklin and Biffle-Sengtown general soil map units.

This unit makes up about 12 percent of the survey area. It is about 29 percent Humphreys soils, 24 percent Riverby soils, 15 percent Tarklin soils, and 32 percent soils of minor extent.

The soils of minor extent are Pickwick, Paden, Trace, and Armour soils on stream terraces, Minvale soils on footslopes, and Sullivan, Melvin, and Lobelville soils on flood plains.

Humphreys soils are on stream terraces and footslopes. These soils formed in alluvium and colluvium. They are well drained and nearly level to sloping. They are brown, gravelly, and medium textured in the subsoil and grade to dark yellowish brown, extremely gravelly, and moderately coarse textured in the substratum.

Riverby soils are on narrow flood plains. These soils formed in gravelly alluvium. They are nearly level and excessively drained. They are yellowish brown, extremely gravelly, and moderately coarse textured and coarse textured in the substratum.

Tarklin soils are on footslopes and stream terraces. These soils formed in colluvium and alluvium. They are sloping and moderately well drained. They are strong brown and medium textured in the upper part of the subsoil and are a very dense, gravelly fragipan in the lower part.

About 85 percent of this map unit has been cleared. Humphreys, Riverby, and Tarklin soils are commonly in grass for use as pasture or hay. Some areas are used for corn, soybeans, wheat, and tobacco.

Gently sloping areas of Humphreys soils are well suited to most crops. Riverby soils are poorly suited to crops both because of frequent flooding and because of droughtiness during the dry season. Sloping areas of Humphreys and Tarklin soils are poorly suited to crops because of an erosion hazard and the low available water capacity. Conservation measures are needed to prevent erosion in sloping areas.

The soils in this map unit are moderately suited or well suited to forage and timber

production. Areas of Humphreys soils that are not subject to flooding are well suited to most residential and commercial uses. Slow permeability in the fragipan on Tarklin soils and frequent flooding on Riverby soils are severe limitations affecting septic systems.

3. Pickwick

Very deep, well drained, gently sloping or sloping soils; on stream terraces

This map unit consists of soils in the Piney River Valley. The valley consists of stream terraces and a very narrow flood plain. Slope dominantly ranges from 2 to 12 percent.

This unit makes up about 2 percent of the survey area. It is about 69 percent Pickwick soils and 31 percent soils of minor extent.

The soils of minor extent are Armour, Paden, Trace, and Woodmont soils on stream terraces; Biffle soils on hillsides; Tarklin, Humphreys, and Minvale soils on footslopes and stream terrace escarpments; and Riverby, Sullivan, and Lobelville soils on flood plains.

Pickwick soils are on stream terraces. These soils formed in alluvium. They are gently sloping to sloping. They are strong brown and yellowish red and medium textured in the subsoil and become red and fine textured with depth.

About 80 percent of this map unit is cleared. Pickwick soils are commonly in grass or grass-legume mixtures for use as pasture or hay. They are also used for corn, soybeans, wheat, and tobacco. This map unit comprises a significant amount of the county’s prime farmland.

Pickwick soils, unless severely eroded, are moderately suited or well suited to corn, soybeans, wheat, and tobacco. Soil conservation practices are needed to control erosion. Pickwick soils are well suited to forage and timber production. They are also well suited to most residential and commercial uses.

Dominantly Steep to Gently Sloping Soils on Uplands

These soils make up about 77 percent of the survey area. They formed in residuum, marine deposits, loess over residuum or marine deposits, and colluvium over residuum. They are excessively drained to moderately well drained.

4. Sengtown-Mountview-Dickson

Very deep, well drained to moderately well drained, gently sloping to steep soils; on uplands

This map unit consists of the broad, less dissected areas of the Highland Rim (fig. 5). It has wide, loess-capped ridges notched with narrow, dendritic drainageways. Slope ranges from 2 to 60 percent.

This unit makes up about 3 percent of the survey area. It is about 43 percent Sengtown soils, 35 percent Mountview soils, 15 percent Dickson soils, and 7 percent soils of minor extent.

The soils of minor extent are Pickwick and Humphreys soils on stream terraces, Sullivan and Lobelville soils on flood plains, Guthrie soils in depressions, and Lax soils on narrow ridgetops.

Sengtown soils are on convex ridgetops and side slopes. These soils formed in residuum derived from cherty limestone. They are very deep, well drained, and sloping to steep. They are red, gravelly, and fine textured in the subsoil.

Mountview soils are on upland ridgetops and side slopes. These soils formed in loess and in the underlying residuum derived from cherty limestone. They are very deep, well drained, and gently sloping or sloping. They are strong brown and medium textured in the upper part of the subsoil and red, gravelly, and fine textured in the lower part.

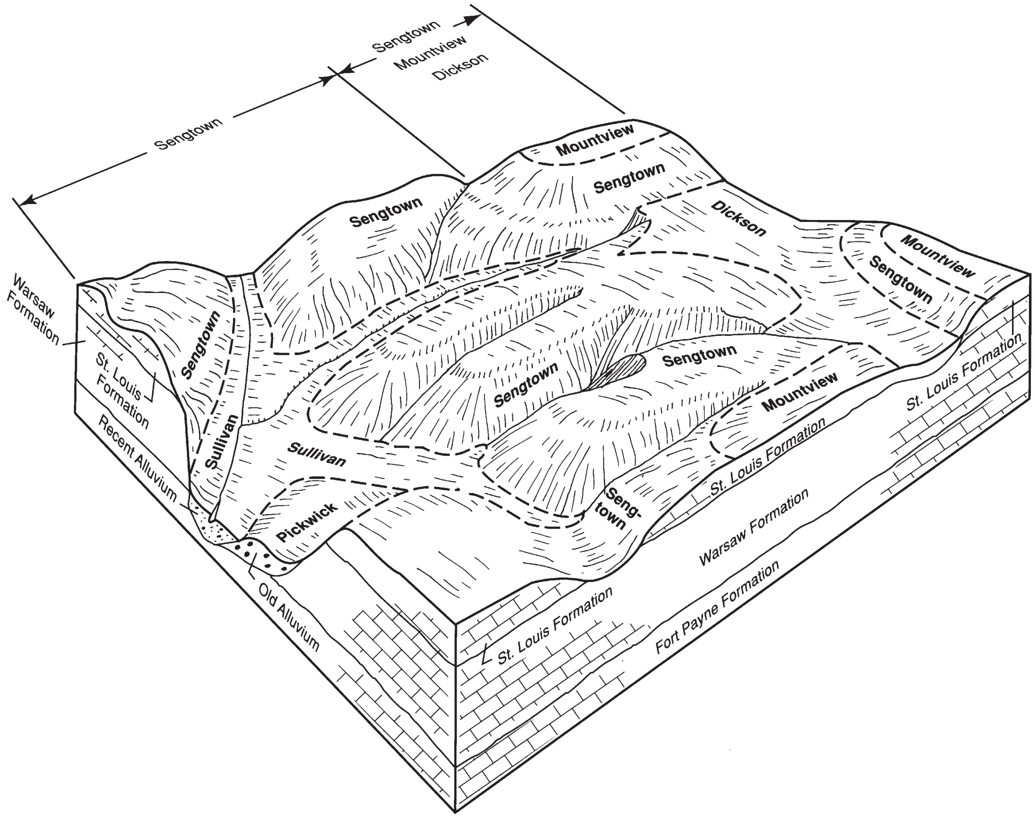

Figure 5.—Pattern of soils and parent material in the Sengtown-Mountview-Dickson and Sengtown general soil map units.

Dickson soils are on slightly concave and undulating upland ridges. These soils formed in loess and in the underlying residuum derived from cherty limestone. They are very deep, moderately well drained, and gently sloping. They are yellowish brown and light olive brown and medium textured in the upper part the subsoil; they have a mottled, medium-textured, dense fragipan in the lower part.

About 70 percent of this map unit is cleared. The wooded areas consist of oaks and hickories. Mountview and Dickson soils are commonly in grass for use as pasture and hay. Small areas are in corn, soybeans, wheat, and tobacco. Sengtown soils are used as pasture and woodland.

Mountview and Dickson soils are well suited to crops if erosion is controlled. The less sloping areas of Sengtown soils can be used for crops in rotation with several seasons of vegetative cover. Mountview, Dickson, and Sengtown soils are well suited to pasture and hay. They are well suited to use as woodland. Most areas of Mountview soils are moderately suited to most residential and commercial uses. Dickson soils are poorly suited to residential and commercial uses because of wetness and slow permeability. The slope is a limitation for most uses in areas of the Sengtown soil.

5. Sengtown

Very deep, well drained, sloping to steep soils; on uplands

This map unit consists of the moderately dissected parts of the Highland Rim (fig. 5). It has sloping ridgetops and moderately steep or steep hillsides. The drainageways are narrow and dendritic. Slope ranges from 5 to 60 percent.

This unit makes up about 11 percent of the survey area. It is about 80 percent Sengtown soils and 20 percent soils of minor extent.

The soils of minor extent are Mountview, Biffle, Dickson, and Lax soils on uplands, Minvale and Tarklin soils on footslopes, and Humphreys and Tarklin soils on footslopes and stream terraces.

Sengtown soils are on convex ridgetops and side slopes. These soils formed in residuum derived from cherty limestone. The are red, gravelly, and fine textured in the subsoil.

About 60 percent of this map unit is wooded. Many areas of Sengtown soils are cleared and used as pasture. Small, less sloping areas are used as cropland. The common timber species in this unit are southern red oak, black oak, white oak, and hickory.

Less sloping ridgetops of Sengtown soils can be used as cropland if erosion is controlled. The sloping ridgetops and side slopes of Sengtown soils are well suited to pasture and hay. The moderately steep hillsides of Sengtown soils are moderately suited to pasture. Most areas of the map unit are well suited to woodland. The less sloping ridgetops are moderately suited to most residential and commercial uses. The steeper areas are poorly suited to residential and commercial uses because of the slope.

6. Biffle-Sengtown

Moderately deep to very deep, somewhat excessively drained to well drained, sloping to steep soils; on uplands

This map unit consists of the highly dissected parts of the Highland Rim capped by thin, residual remnants of cherty limestone and loess (fig. 4). It consists of narrow, winding ridgetops and steep hillsides. The drainage pattern is dendritic. Slopes range from 5 to 60 percent.

This unit makes up about 32 percent of the survey area. It is about 65 percent Biffle soils, 22 percent Sengtown soils, and 13 percent soils of minor extent.

The soils of minor extent are Mountview and Lax soils on uplands; Tarklin and Humphreys soils on footslopes; and Riverby, Sullivan, and Lobelville soils on flood plains.

Biffle soils are on steep, convex hillsides and narrow convex ridgetops. These soils formed in areas underlain by granular, tripolitic chert. They are moderately deep, somewhat excessively drained, and sloping to steep. They are yellowish brown, gravelly, and medium textured in the subsoil.

Sengtown soils are on convex ridgetops and moderately steep side slopes. These soils formed in residuum derived from cherty limestone. They are red, gravelly, and fine textured in the subsoil.

About 85 percent of this map unit is wooded. Some areas of Sengtown soils are cleared and used as pasture. The common trees are southern red oak, chestnut oak, white oak, black oak, and hickory. Some chert pits used as a source for roadfill are in this unit.

The sloping areas of Sengtown soils can be used as cropland if erosion is controlled. Biffle soils are poorly suited or not suited to use as cropland because of the slope and droughtiness. The ridgetops and shoulder slopes of Sengtown and Biffle soils can be used for pasture and hay. Biffle soils on steeper hillsides are not suited because of the droughtiness and slope. Sengtown soils are well suited to woodland use. Biffle soils are moderately suited to drought-tolerant tree species; planting seedlings on the moister, east- and north-facing slopes is recommended. Only the lesser sloping areas of Sengtown and Biffle soils are moderately suited to residential and commercial uses. Steeper areas of Biffle and Sengtown soils are poorly suited to residential and commercial uses because of the slope.

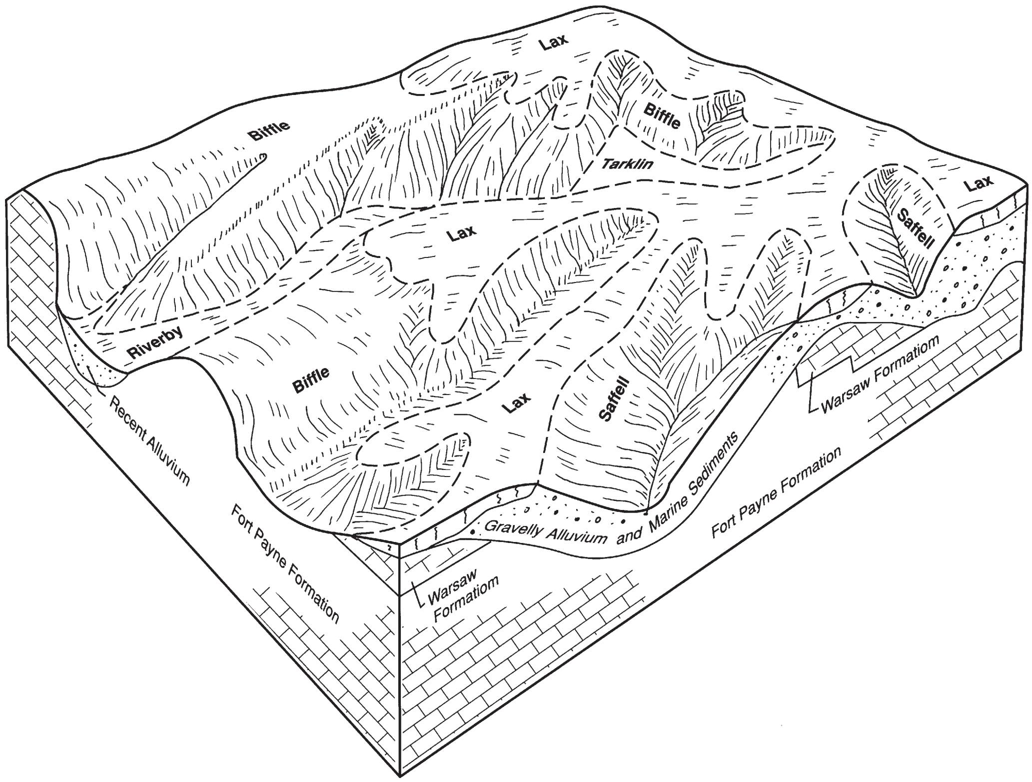

Figure 6.—Pattern of soils and parent material in the Biffle-Lax general soil map unit.

7. Biffle-Lax

Moderately deep to very deep, somewhat excessively drained to moderately well drained, gently sloping to steep soils; on uplands

This map unit consists of the dissected parts of the Highland Rim capped by thin loess and gravelly marine deposits (fig. 6). It has narrow, winding ridgetops and steep hillsides. The drainage pattern is dendritic. Slopes range from 2 to 60 percent.

This unit makes up about 13 percent of the survey area. It is about 54 percent Biffle soils, 22 percent Lax soils, and 24 percent soils of minor extent.

The soils of minor extent are Sengtown, Saffell, and Mountview soils on uplands; Tarklin and Humphreys soils on footslopes; and Riverby, Sullivan, and Lobelville soils on flood plains.

Biffle soils are on steep, convex hillsides and narrow, convex ridgetops.

They are moderately deep, somewhat excessively drained, and sloping to steep. They are yellowish brown, gravelly, and medium textured in the subsoil. They formed in areas underlain by granular, tripolitic chert.

Lax soils are on ridgetops. They are very deep, moderately well drained, and gently sloping to sloping. They are strong brown and yellowish brown and medium textured in the upper part of the subsoil; they have a dense, gravelly, medium-textured fragipan in the lower part. These soils formed in loess, gravelly marine sediments, and residuum derived from cherty limestone.

About 85 percent of this map unit is wooded. Some areas are cleared and used as pasture. The common trees are chestnut oak, white oak, black oak, post oak, black gum, and hickory. Some chert and gravel pits are in this unit. They are used as a source for roadfill.

The undulating and rolling ridgetops of Lax soils are moderately suited to row crops

if managed to reduce the hazard of erosion. Biffle soils are normally too steep and droughty for use as cropland. Lax soils are well suited to pasture and hay. Biffle soils are poorly suited because of the slope and droughtiness.

Lax soils are well suited to woodland. Biffle soils are moderately suited to drought-tolerant species. Most of this map unit is poorly suited to residential and commercial uses; the wetness and slow permeability in areas of Lax soils and the depth to bedrock and slope in areas of Biffle soils are limitations.

8. Saffell-Lax

Very deep, well drained or moderately well drained, gently sloping to steep soils; on uplands

This map unit is along the northwest border of the county. It consists of the dissected parts of the Highland Rim capped by thick, gravelly marine deposits. The soils are on gently sloping or sloping ridgetops and moderately steep or steep hillsides. The drainage pattern is dendritic. Slope ranges from 2 to 60 percent.

This unit makes up less than 1 percent of the survey area. It is about 48 percent Saffell soils, 20 percent Lax soils, and 32 percent soils of minor extent.

The soils of minor extent are Sengtown, Biffle, and Mountview soils on uplands and Tarklin and Humphreys soils on footslopes.

Saffell soils are on moderately steep or steep hillsides. These soils formed in areas of gravelly marine deposits. They are very deep to bedrock, well drained, and moderately steep or steep. They are strong brown, very gravelly, and moderately fine textured in the subsoil.

Lax soils are on ridgetops. These soils formed in loess, in gravelly marine sediments, and in residuum derived from cherty limestone. They are very deep to bedrock, moderately well drained, and gently sloping or sloping. They are strong brown and yellowish brown and medium textured in the upper part the subsoil; they have a mottled, dense, gravelly, medium-textured fragipan in the lower part.

About 85 percent of this map unit is wooded. Some areas are cleared and are used as pasture. The common trees are chestnut oak, white oak, black oak, post oak, blackgum, and hickory.

Gently sloping and sloping ridgetops of Lax soils are moderately suited to use as cropland if erosion is controlled. Saffell soils are not suited to use as cropland because of the slope and droughtiness. Lax soils are well suited to use as pasture and hay. Saffell soils are poorly suited or not suited to pasture because of the slope and droughtiness. Lax soils are well suited to woodland use. Saffell soils are moderately suited to drought-tolerant species. Most areas of this unit are poorly suited to most residential and commercial uses; the wetness and slow permeability in areas of Lax soils and the slope in areas of Saffell soils are limitations.

9. Biffle

Moderately deep, somewhat excessively drained, sloping to steep soils; on uplands

This map unit consists of the most highly dissected parts of the Highland Rim underlain primarily by the Fort Payne Formation. It has sloping to moderately steep ridgetops and steep hillsides. The drainage pattern is dendritic. Slope ranges from 5 to 60 percent.

This unit makes up about 15 percent of the survey area. It is about 91 percent Biffle soils and about 9 percent soils of minor extent.

The soils of minor extent are Sengtown, Mountview, Hawthorne, Sulphura, and Lax soils on uplands; Tarklin soils on footslopes; Humphreys soils on footslopes and stream terraces; and Riverby and Lobelville soils on flood plains.

Biffle soils are on steep, convex hillsides and narrow, convex ridgetops. These soils

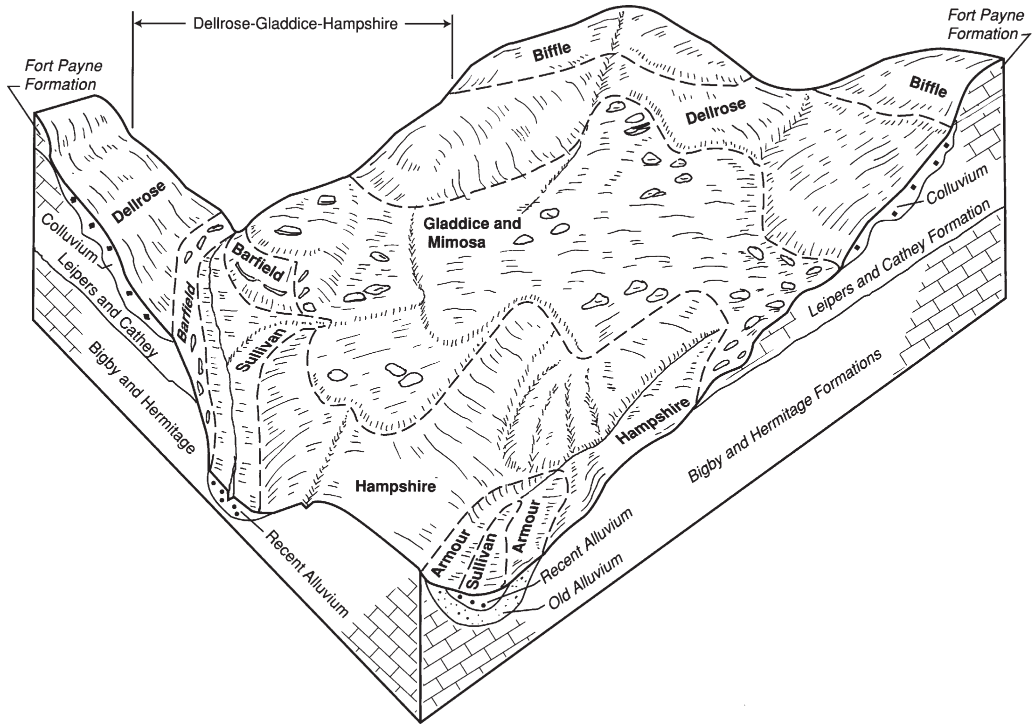

Figure 7.—Pattern of soils and parent material in the Dellrose-Gladdice-Hampshire general soil map unit.

formed in areas underlain by granular, tripolitic chert. They are yellowish brown, gravelly, and medium textured in the subsoil.

About 90 percent of this map unit is wooded. Some areas are cleared and used as pasture. The trees generally are chestnut oak, white oak, black oak, and hickory. Numerous chert pits used as a source for roadfill are in this unit.

Biffle soils are poorly suited to use as cropland because of the depth to bedrock, slope, and low available water capacity. The ridgetops in the less steep areas are moderately suited to pasture and hay. Plant selection and good management are needed because of the low available water during dry seasons. This map unit is moderately suited to drought-tolerant tree species. Planting trees on east- and north-facing slopes is recommended in establishing a stand. Most of this unit is poorly suited to residential and commercial uses because of the slope.

10. Dellrose-Gladdice-Hampshire

Moderately deep to very deep, well drained, sloping to steep soils; on hillsides

This map unit consists of the hilly parts of the Outer Nashville Basin. It is in the southeast part of the county, near Shady Grove (fig. 7). The soils are on sloping or moderately steep hilltops and steep to moderately steep hillsides. Drainage is in a dendritic pattern. It consists mainly of intermittent streams that sink into limestone bedrock. Slope ranges from 5 to 40 percent.

This unit makes up about 3 percent of the survey area. It is about 54 percent Dellrose soils, 25 percent Gladdice soils, 16 percent Hampshire soils, and 5 percent soils of minor extent and areas of limestone outcrops.

The soils of minor extent are Armour and Pickwick soils on stream terraces; Udarents, or areas of inactive phosphate stripmining; Mimosa and Barfield soils on uplands; and Arrington and Sullivan soils on flood plains.

Dellrose soils are on colluvial hillsides and footslopes. These soils formed in cherty colluvium underlain by limestone residuum. They are very deep and sloping or moderately steep. They are strong brown, gravelly, and medium textured in the upper part the subsoil; they are strong brown and fine textured in the lower part.

Gladdice soils are on hillsides. These soils formed in residuum derived from limestone. They are moderately deep and sloping to steep. They are yellowish brown and fine textured in the subsoil.

Hampshire soils are on summits and side slopes of low hills. These soils formed in residuum derived from siltstone and limestone. They are deep to weathered limestone and are sloping or moderately steep. They contain few siltstone channers. They are strong brown and fine textured in the subsoil.

About 50 percent of this map unit is cleared. The steeper slopes, gullied areas, and areas of rock outcrops are commonly wooded. The timber species include oaks, hickories, maples, hackberry, black walnut, locusts, and red cedar. Dellrose and Hampshire soils are commonly in pasture. Gladdice soils are associated with rock outcrops and are commonly wooded. Some small areas are used as pasture.

Most areas of this map unit are poorly suited or not suited to cropland because of the slope and rock outcrops. Less sloping areas of Dellrose and Hampshire soils are moderately suited to crops and well suited to pasture and hay. Gladdice soils commonly have numerous rock outcrops and are moderately suited to pasture in less steep areas. Most areas of this unit are well suited or moderately suited to woodland use. Most areas are poorly suited to residential and commercial uses because of the slope. Less sloping areas of Dellrose and Hampshire soils are moderately suited to some residential uses. Where slopes are altered, steep areas of Dellrose soils are subject to landslides.

Detailed Soil Map Units

The map units delineated on the detailed maps at the back of this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit is given under the heading "Use and Management of the Soils."

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed. Consequently, they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Biffle gravelly silt loam, 30 to 60 percent slopes, is a phase of the Biffle series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or associations.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Hampshire-Gullied land complex, 12 to 30 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Hawthorne-Sulphura association, steep, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see “Contents”) give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

AmB—Armour silt loam, 2 to 5 percent slopes

Composition

Armour and similar soils: 90 to 100 percent

Setting

Landscape position: Stream terraces
Major use: Cropland; corn, soybeans, small grain, and tobacco

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: High
Seasonal high water table: More than 6 feet
Soil reaction: Strongly acid or moderately acid
Shrink-swell potential: Low in the upper part of the subsoil and moderate in the lower part
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 28 inches—strong brown silt loam
28 to 41 inches—brown silty clay loam
41 to 75 inches—strong brown clay loam

Substratum:
75 to 87 inches—strong brown and dark brown clay loam

Figure 8.—An area of Armour silt loam, 2 to 5 percent slopes. Crop residue management and winter cover crops help to control erosion.

Inclusions

Contrasting inclusions:
- Areas of moderately well drained soils in small depressions
- Areas of gravelly soils on short terrace escarpments

Similar inclusions:
- Small areas of Armour soils that have a thinner, eroded surface layer and that are on more sloping parts of the map unit
- Small areas of Trace soils intermingled with Armour soils on low terraces

Use and Management

Cropland

Suitability: Well suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Conservation practices are needed to control erosion and to maintain soil productivity.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion (fig. 8).

Pasture and hay

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Well suited

Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Well suited
Limiting soil features: None
Management measures and considerations: None

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Moderate permeability
Management measures and considerations:
- Increasing the size of the absorption field helps to overcome restricted permeability.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 2e

AmC—Armour silt loam, 5 to 12 percent slopes

Composition

Armour and similar soils: 80 to 100 percent

Setting

Landscape position: Stream terraces
Major use: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: High
Seasonal high water table: More than 6 feet
Soil reaction: Strongly acid or moderately acid
Shrink-swell potential: Low in the upper part of the subsoil and moderate in the lower part
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 28 inches—strong brown silt loam
28 to 41 inches—brown silty clay loam
41 to 75 inches—strong brown clay loam

Substratum:
75 to 87 inches—strong brown and dark brown clay loam

Inclusions

Contrasting inclusions:
- Areas of moderately well drained soils in small depressions
- Areas of gravelly soils on short terrace escarpments

Similar inclusions:
- Small areas of Armour soils that have a thinner, eroded surface layer and that are in the more sloping parts of the map unit

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Conservation practices are needed to control erosion and to maintain soil productivity.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.

Pasture and hay

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- Overgrazing reduces plant cover, causes erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- In some areas, landshaping is needed in site preparation or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Slope

Management measures and considerations:
- The slope can increase installation costs where filter lines are located on the contour.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel increases its strength and stability.

Interpretive Group

Capability subclass: 3e

AmC3—Armour silty clay loam, 5 to 12 percent slopes, severely eroded

Composition

Armour and similar soils: 75 to 85 percent

Setting

Landscape position: Stream terraces
Major use: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: High
Seasonal high water table: More than 6 feet
Soil reaction: Strongly acid or moderately acid
Shrink-swell potential: Low in the upper part of the subsoil and moderate in the lower part
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown silty clay loam

Subsoil:
6 to 42 inches—dark yellowish brown silty clay loam
42 to 60 inches—yellowish brown clay loam that has a few mottles in shades of brown

Inclusions

Contrasting inclusions:
- Areas of gravelly soils on short terrace escarpments

Similar inclusions:
- Some small, intermingled areas of Armour soils that are not severely eroded and that have a thicker surface layer

Use and Management

Cropland

Suitability: Poorly suited

Limiting soil features: Erosion hazard and a severely eroded surface layer
Management measures and considerations:
- Erosion is a major concern when cultivated crops are grown.
- Conservation practices help to control erosion and to improve soil productivity.
- Erosion has severely reduced the tilth and productivity of this soil.
- Cropping systems are needed that include rotations in which the soil remains in grass and legumes for several seasons.
- This map unit commonly has high phosphate levels in the Duck River Valley.

Pasture and hay

Suitability: Moderately suited
Limiting soil features: Severely eroded surface layer
Management measures and considerations:
- Erosion has severely reduced soil productivity.
- Conventional seedbeds are more difficult to prepare and forage yields are lower on this soil than on less eroded Armour soils.
- Increasing soil amendments and seeding rates can produce quality forage stands.
- Such species as tall fescue and sericea lespedeza are adapted to severely eroded areas.
- Overgrazing reduces plant cover, causes further erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates help to improve the soil condition.

Woodland

Suitability: Moderately suited
Limiting soil features: Seedling mortality and plant competition
Management measures and considerations:
- Seedling survival rates are reduced because of the exposed subsoil.
- Planting large, hardy seedlings with closer spacings than typical can help in establishing stands.
- Maintaining as much leaf litter and duff as possible can help to increase moisture for young plants and help to prevent further erosion.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping and herbicide application, reduces immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- The slope can increase installation costs where filter lines are located on the contour.

Local roads and streets

Suitability: Moderately suited

Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel increases its strength and stability.

Interpretive Group

Capability subclass: 4e

An—Arrington silt loam, frequently flooded

Composition

Arrington and similar soils: 90 to 100 percent

Setting

Landscape position: Flood plain of the Duck River and some tributaries; dominantly 0 to 3 percent slopes
Major use: Cropland (corn and soybeans); summer hay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: Frequent for very brief or brief periods from December to May
Available water capacity: High
Seasonal high water table: Apparent at a depth of 4 to 5 feet from January to March
Soil reaction: Slightly acid or neutral
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 10 inches—dark brown silt loam

Subsurface layer:
10 to 36 inches—dark brown silt loam

Substratum:
36 to 60 inches—brown silt loam that has a few lenses of yellowish brown silt loam and pockets of charcoal

Inclusions

Contrasting inclusions:
- Areas of soils that are along natural stream levees and that are loamy or sandy throughout.

Similar inclusions:
- Intermingled areas of soils that have a lighter colored and a thinner surface layer.
- Areas of soils on slopes of more than 3 percent along the edges of flood-plain channels

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Flooding

Figure 9.—An area of Arrington silt loam, frequently flooded. This soil produces high yields of summer hay and such crops as soybeans and grain sorghum. Flooding in winter and early spring can damage spring- and fall-planted crops.

Management measures and considerations:
- This map unit is poorly suited to small grains because of winter flooding.
- Flooding can damage crops planted early in spring (fig. 9).
- Returning crop residue to the soil helps to maintain the soil condition.

Pasture and hay

Suitability: Moderately suited to pasture; well suited to hay
Limiting soil features: Flooding
Management measures and considerations:
- Swift floodwater frequently damages young forage plants and fences.
- Livestock should be given access corridors to areas above the flood plain.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Moderately suited
Limiting soil features: Seedling mortality and plant competition
Management measures and considerations:
- Flooding increases seedling mortality.
- Floodwater can cover this map unit for nearly a week during wet periods.
- Bedding rows is necessary in some places to increase seedling survival rates.
- Planting adapted tree species ensures seedling survival.
- Undesirable plants prevent adequate natural or artificial reforestation without intensive site preparation and maintenance.
- Site preparation, such as chopping, burning, bedding rows, and herbicide application, can reduce both debris and immediate plant competition and facilitate mechanical planting.

Dwellings

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Flooding and low strength
Management measures and considerations:
- Roads should be constructed on raised fill material above the flood plain.
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel increases its strength and stability.

Interpretive Group

Capability subclass: 2w

BaF—Barfield-Rock outcrop complex, 20 to 70 percent slopes

Composition

Barfield and similar soils: 40 to 80 percent
Rock outcrop: 10 to 40 percent

Setting

Landscape position: Hillsides that have limestone outcrops
Major use: Woodland

Properties and Qualities of the Barfield Soil

Drainage class: Well drained
Permeability: Moderately slow
Flood hazard: None
Available water capacity: Very low
Seasonal high water table: More than 6 feet
Soil reaction: Slightly acid to mildly alkaline
Shrink-swell potential: High
Depth to bedrock: 8 to 20 inches

Typical Profile

Barfield

Surface layer:
0 to 7 inches—dark brown silty clay loam that has few flagstones

Subsoil:
7 to 16 inches—dark yellowish brown clay that has few flagstones

Bedrock:
16 inches—hard gray limestone

Rock outcrop

Limestone rock outcrop consists of either horizontal shelves or isolated stones or boulders. It ranges from 1 to 15 feet across and as much as 20 feet long and extends from 1 to 3 feet above the soil surface. The bands of rock commonly have cracks or crevices 1 to 10 feet wide and from 4 to more than 6 feet deep containing clayey soil material.

Inclusions

Contrasting inclusions:
- Some areas of soils that are more than 20 inches deep to hard bedrock
- Areas of soils that are less than 8 inches deep to hard bedrock near and between rock outcrops

Similar inclusions:
- Some small areas of soils that are loamy textured throughout

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Slope and rockiness
Management measures and considerations:
- Sites on other soils should be considered.

Pasture

Suitability: Not suited
Limiting soil features: Slope, rockiness, and droughtiness
Management measures and considerations:
- Sites on other soils should be considered.

Woodland

Suitability: Poorly suited
Limiting soil features: Erosion hazard, equipment limitation, seedling mortality, and windthrow hazard
Management measures and considerations:
- Providing adequate plant cover helps to control erosion on roads and skid trails.
- Seeding a permanent plant cover is needed on roadcuts and along road shoulders.
- Rock outcrops and very steep slopes limit the use of equipment in forest management.
- Cable systems or other methods may be needed in harvesting timber.
- Seedling survival rates are low because of droughtiness and the clayey texture.
- Shallow depth to bedrock severely restricts root growth.
- Trees may be uprooted during windy and wet periods.
- Planting trees that have a shallow root system and minimizing thinning help to prevent uprooting.

Dwellings

Suitability: Not suited
Limiting soil features: Excessive slope, shallow depth to bedrock, and high shrink-swell potential in the subsoil
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Shallow depth to bedrock and excessive slope
Management measures and considerations:
• Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Shallow depth to hard bedrock, slope, rock outcrops, and high shrink-swell potential
Management measures and considerations:
• Blasting bedrock is needed for deep cuts.

Interpretive Group

Capability subclass: Barfield—7s; Rock outcrop—none assigned

BbC—Biffle gravelly silt loam, 5 to 15 percent slopes

Composition

Biffle and similar soils: 85 to 95 percent

Setting

Landscape position: Narrow, convex, sloping ridgetops
Major use: Woodland

Soil Properties and Qualities

Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Flood hazard: None
Available water capacity: Low
Seasonal high water table: More than 6 feet
Soil reaction: Extremely acid or very strongly acid
Shrink-swell potential: Low
Depth to soft bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsurface layer:
2 to 11 inches—yellowish brown gravelly silt loam

Subsoil:
11 to 32 inches—yellowish brown gravelly silty clay loam

Substratum:
32 to 60 inches or more—highly weathered, tripolitic chert

Inclusions

Contrasting inclusions:
• Areas of Lax and Sengtown soils on ridge crests
• Areas of soils, on convex ridgetops, that have a dense bed of chert within a depth of 20 inches

Similar inclusions:
- Intermingled on some slopes with the Biffle soil, areas of soils that have a very gravelly subsoil and that are underlain by siltstone
- Areas of Biffle soils that have a thin, silt loam surface layer
- Areas of soils, in the northwestern part of the county, that have gravelly marine deposits in the surface layer.

Use and Management

Cropland

Suitability: Poorly suited
Limiting soil features: Droughtiness, slope, and erosion hazard
Management measures and considerations:
- This soil is droughty, and yields on most crops are low.
- Sites on other soils should be considered for row crops.

Pasture and hay

Suitability: Moderately suited
Limiting soil features: Droughtiness
Management measures and considerations:
- Droughtiness reduces forage yields and lowers the response to fertilizers.
- Tall fescue and siricea lespedeza are adapted to this soil; however, less adapted forage species are difficult to maintain.

Woodland

Suitability: Moderately suited
Limiting soil features: Seedling mortality, windthrow hazard, and plant competition
Management measures and considerations:
- Seedling survival rates are reduced because of the droughtiness and limited rooting depth.
- Planting drought-tolerant species is recommended.
- The moderate depth to bedrock restricts root growth.
- Some trees may be uprooted during windy periods.
- Planting trees that have a shallow root system and minimizing thinning help to prevent uprooting.
- Undesirable plants reduce adequate natural or artificial reforestation without site preparation and maintenance.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Moderate depth to fractured chert beds
Management measures and considerations:
- Specially designed systems may be needed because of the depth to a restrictive layer.

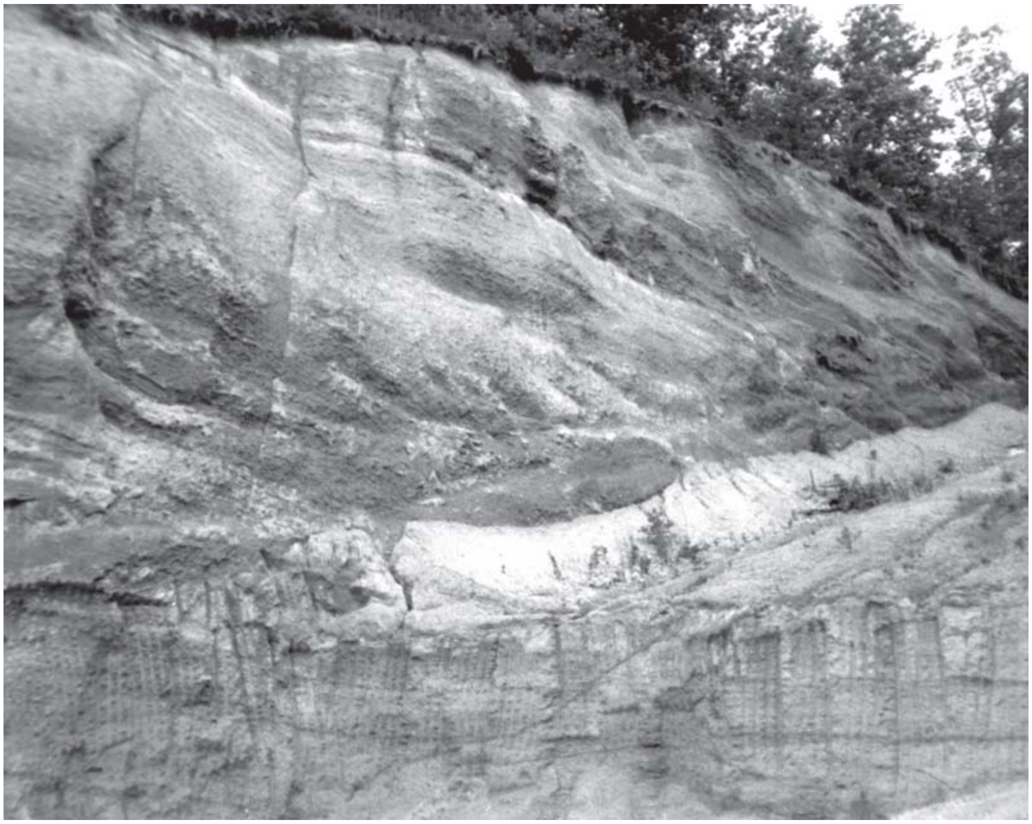

Figure 10.—An area of Biffle gravelly silt loam, 5 to 15 percent slopes. This soil formed in dense beds of granular chert. Throughout the county this chert is used as road surfaces and subgrade.

Local roads and streets

Suitability: Well suited
Limiting soil features: Slope
Management measures and considerations:
- Laying out roads in less sloping areas of the unit is recommended.
- Suitable sources of roadfill are common in this map unit (fig. 10).

Interpretive Group

Capability subclass: 4s

BbD—Biffle gravelly silt loam, 15 to 30 percent slopes

Composition

Biffle and similar soils: 85 to 95 percent

Setting

Landscape position: Convex hillsides
Major use: Woodland

Soil Properties and Qualities

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid
Flood hazard: None
Available water capacity: Low
Seasonal high water table: More than 6 feet
Soil reaction: Extremely acid or very strongly acid
Shrink-swell potential: Low
Depth to soft bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsurface layer:
2 to 11 inches—yellowish brown gravelly silt loam

Subsoil:
11 to 32 inches—yellowish brown gravelly silty clay loam

Substratum:
32 to 60 inches or more—highly weathered, tripolitic chert

Inclusions

Contrasting inclusions:
- Sulphura soils on the lower parts of hillsides
- In steep areas soils that have a dense bed of chert within a depth of 20 inches
- Tarklin and Humphreys soils on footslopes
- Riverby soils along narrow drainageways

Similar inclusions:
- Intermingled with Biffle soils, areas of soils that have a very gravelly subsoil and that are underlain by siltstone
- Small areas of soils that have a thin surface layer of silt loam
- Areas of soils, in the northwestern part of the county, that have gravelly marine deposits in the surface layer

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Slope, erosion hazard, and droughtiness
Management measures and considerations:
- Sites on other soils should be considered.

Pasture and hay

Suitability: Poorly suited
Limiting soil features: Slope and droughtiness
Management measures and considerations:
- Overgrazing this soil reduces plant cover, causes erosion, and encourages undesirable plant species.
- Deferred grazing, rotational grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.
- This map unit is best suited to drought-tolerant forages, such as tall fescue and sericea lespedeza.
- The slope is too steep for the safe operation of hay harvesting equipment.
- North-facing slopes are cooler and moister and thus produce more forages than south-facing slopes.

Woodland

Suitability: Moderately suited
Limiting soil features: Erosion hazard, equipment limitation, seedling survival, windthrow hazard, and plant competition
Management measures and considerations:
- Tree growth is greatest on the lower third of north- and east-facing slopes, which are cooler and have more moisture during the dry months.
- Providing adequate plant cover helps to control erosion on roads and skid trails.
- A permanent plant cover is needed on roadcuts and in fill areas to help control erosion.
- Special safety precautions are needed when crossing slopes with wheeled equipment.
- The numerous content of fragments in this map unit causes droughtiness and reduces seedling survival rates.
- Increasing tree planting rates, choosing north- and east-facing slopes, and selecting drought-tolerant species can improve seedling survival rates.
- Windthrow is a hazard when winds are strong; it can be partly overcome by selecting shallow-rooted species and minimizing thinning.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such burning and herbicide application, can reduce immediate plant competition.

Dwellings

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Slope and a limited depth to dense chert beds
Management measures and considerations:
- Untreated effluent can move along the surface of the restrictive layer, seep in areas downslope, and cause a health hazard; consequently, specially designed systems are needed.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- Suitable sources of roadfill are common in this map unit.
- Building roads in the less sloping areas can reduce cutting and filling.

Interpretive Group

Capability subclass: 6s

BbF—Biffle gravelly silt loam, 30 to 60 percent slopes

Composition

Biffle and similar soils: 85 to 95 percent

Setting

Landscape position: Steep, convex hillsides
Major use: Woodland

Soil Properties and Qualities

Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Flood hazard: None
Available water capacity: Low
Seasonal high water table: More than 6 feet
Soil reaction: Extremely acid or very strongly acid
Shrink-swell potential: Low
Depth to soft bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsurface layer:
2 to 11 inches—yellowish brown gravelly silt loam

Subsoil:
11 to 32 inches—yellowish brown gravelly silty clay loam

Substratum:
32 to 60 inches or more—highly weathered, tripolitic chert

Inclusions

Contrasting inclusions:
- Areas of Sulphura soils and rock outcrops on the lower parts of steep hillsides
- Areas of soils that have a dense bed of chert within a depth of 20 inches on the steeper parts of some hillsides
- Areas of Tarklin and Humphreys soils on footslopes
- Areas of Riverby soils along narrow drainageways

Similar inclusions:
- Intermingled areas of soils that have a very gravelly subsoil and that are underlain by siltstone
- Areas of soils, in the northwestern part of the county, that have gravelly marine deposits in the surface layer

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Slope, erosion hazard, and droughtiness
Management measures and considerations:
- Sites on other soils should be considered.

Pasture and hay

Suitability: Not suited
Limiting soil features: Slope and droughtiness
Management measures and considerations:
- Sites on other soils should be considered.

Woodland

Suitability: Poorly suited

Limiting soil features: Erosion hazard, equipment limitation, seedling mortality, windthrow hazard, and plant competition
Management measures and considerations:
- Tree growth is greatest on the lower third of north- and east-facing slopes, which are cooler and have more moisture during the dry months.
- Providing adequate plant cover helps to control erosion on roads and skid trails.
- A permanent plant cover is needed on roadcuts and in fill areas to help control erosion.
- The slopes is too steep to operate wheeled and tracked equipment safely across it in planting or harvesting operations.
- Cable yarding or other techniques may be needed in harvesting timber.
- The numerous content of fragments in this map unit causes droughtiness and reduces seedling survival rates.
- Increasing tree planting rates, choosing north- and east-facing slopes, and selecting drought-tolerant species can improve seedling survival rates.
- Windthrow, a hazard when winds are strong, can be partly overcome by selecting shallow-rooted species and minimizing thinning.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as burning and herbicide application, can reduce immediate plant competition.

Dwellings

Suitability: Not suited
Limiting soil features: Slope
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Slope, a limited depth to chert beds, and a potential of slippage
Management measures and considerations:
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- Building roads in the less sloping areas can reduce cutting and filling.
- Suitable sources of roadfill are common in this map unit.

Interpretive Group

Capability subclass: 7s

DeC2—Dellrose gravelly silt loam, 5 to 15 percent slopes, eroded

Composition

Dellrose and similar soils: 70 to 90 percent

Setting

Landscape position: Footslopes
Major use: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid in the upper part and moderate or moderately slow in the lower part
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid or moderately acid
Shrink-swell potential: Low in the upper part of the soil and moderate in the lower part
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 4 inches—brown gravelly silt loam

Subsurface layer:
4 to 11 inches—dark yellowish brown gravelly silt loam

Subsoil:
11 to 35 inches—strong brown gravelly silty clay loam
35 to 60 inches—strong brown silty clay

Inclusions

Contrasting inclusions:
- Areas of Hampshire soils on small convex slopes
- Areas of Armour soils on stream terraces
- Areas of Sullivan soils in small drainageways

Similar inclusions:
- Some small, severely eroded areas

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Cropping systems should include conservation tillage and rotations with grasses and legumes.

Pasture and hay

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- Overgrazing reduces plant cover, causes further erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.

- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- Landshaping may be needed for site preparation, or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Slope and slower permeability in the lower part of the subsoil
Management measures and considerations:
- The slope and reduced permeability can increase installation costs because more field lines are needed.

Local roads and streets

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- Soil strength is less in the lower, clayey part of the subsoil; if this part of the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 3e

DeD2—Dellrose gravelly silt loam, 15 to 30 percent slopes, eroded

Composition

Dellrose and similar soils: 50 to 80 percent

Setting

Landscape position: Hillsides
Major use: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid in the upper part and moderate or moderately slow in the lower part
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Low in the upper part of the soil and moderate in the lower part
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 4 inches—brown gravelly silt loam

Subsurface layer:
4 to 11 inches—dark yellowish brown gravelly silt loam

Subsoil:
11 to 35 inches—strong brown gravelly silty clay loam
35 to 60 inches—strong brown silty clay

Inclusions

Contrasting inclusions:
- Small areas of Hampshire soils along the lower part of the slope
- Areas of Armour soils on stream terraces
- Areas of Sullivan soils in small drainageways
- Areas of Gladdice and Mimosa soils and areas of rock outcrop on convex slopes

Similar inclusions:
- Some small, severely eroded areas

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Slope
Management measures and considerations:
- The very severe erosion and the equipment hazard are limitations affecting cropland; sites on other soils should be considered.

Pasture and hay

Suitability: Moderately suited to pasture; poorly suited to hay
Limiting soil features: Slope
Management measures and considerations:
- The slopes is too steep for the safe operation of hay harvesting and pasture maintenance equipment.
- Overgrazing reduces plant cover, causes further erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.
- The production of forage is greater on cooler and moister northerly exposures than on south-facing exposures.

Woodland

Suitability: Well suited
Limiting soil features: Erosion hazard, equipment limitation, and plant competition
Management measures and considerations:
- Providing adequate plant cover helps to control erosion on roads and skid trails.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- The slope is too steep for the safe operation of wheeled equipment across it in planting and harvesting operations.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Poorly suited
Limiting soil features: Slope and slippage

Management measures and considerations:
- Altering slopes can cause downslope movement, which can result in severe structural damage; hence, special site design and planning are needed.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Excessive slope
Management measures and considerations:
- Slope can increase installation costs.
- Less sloping areas should be used.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Slope and slippage
Management measures and considerations:
- Road design should consider the potential for landslides.
- Roads should be constructed on the least sloping parts of the map unit.
- Soil strength is less in the lower, clayey part of the subsoil; if this part of the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 6e

DkB—Dickson silt loam, 2 to 5 percent slopes

Composition

Dickson soil and similar soils: 80 to 100 percent

Setting

Landscape position: Gently sloping areas
Major use: Pasture and cropland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or moderately slow in the fragipan
Flood hazard: None
Available water capacity: Moderate or high
Seasonal high water table: Perched between depths of 1.5 and 2.3 feet from December to April
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low in the upper part of the subsoil and moderate in the lower part
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 27 inches—yellowish brown to light olive brown silt loam
27 to 32 inches—yellowish brown, silt loam fragipan that has tongues of pale brown and light brownish gray silt loam

32 to 48 inches—light yellowish brown, silt loam fragipan that has light brownish gray and yellowish brown mottles
48 to 60 inches—strong brown silty clay loam that has gray and yellowish brown mottles

Inclusions

Contrasting inclusions:
- Areas of somewhat poorly drained soils that have a fragipan in the lower landscape positions
- Some nearly level areas of soils that have 2 to 3 feet of recent, local alluvium over Dickson soils
- Mountview soils in higher landscape positions than those of the Dickson soil

Similar inclusions:
- Small areas of severely eroded soils that have a fragipan within a depth of 1 foot
- Intermingled with the Dickson soils in some areas, Lax soils, which have a gravelly fragipan

Use and Management

Cropland

Suitability: Well suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Erosion is a hazard if cultivated crops are grown.
- Conservation practices are needed to control erosion and to maintain soil productivity.
- Excessive erosion can result in dense subsoil material being exposed at or near the surface.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.
- Returning crop residue to the soil helps to improve the soil condition.

Pasture and hay

Suitability: Well suited to most grasses and legumes; not suited to alfalfa
Limiting soil features: The dense fragipan in the subsoil and the seasonal perched water table restrict the root growth of such legumes as alfalfa
Management measures and considerations:
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Moderately suited
Limiting soil features: Windthrow hazard and plant competition
Management measures and considerations:
- Some trees may be uprooted during windy and wet periods.
- Planting trees that have a shallow root system and minimizing thinning help to prevent uprooting.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited; not suited to dwellings with basements

Limiting soil features: Wetness caused by a perched water table
Management measures and considerations:
- Subsurface tile drains and landshaping help to remove excess water.
- Because of wetness, sites on other soils should be considered for dwellings with basements.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: A perched water table during wet periods and restricted permeability in the fragipan
Management measures and considerations:
- Some mapped areas that contain small inclusions of better drained, more permeable soils should be located and, if feasible, used.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 2e

Eg—Egam silt loam, frequently flooded

Composition

Egam and similar soils: 85 to 95 percent

Setting

Landscape position: Flood plain of the Duck River; slopes of 0 to 2 percent
Major use: Cropland (corn and soybeans); summer hay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Flood hazard: Frequent for very brief or brief periods from December to May
Available water capacity: High
Seasonal high water table: Apparent at a depth of 3 to 4 feet from December to March
Soil reaction: Moderately acid to neutral
Shrink-swell potential: Moderate
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 8 inches—dark brown silt loam

Subsoil:
8 to 18 inches—dark brown silty clay loam
18 to 44 inches—dark brown silty clay
44 to 60 inches—brown clay

Inclusions

Contrasting inclusions:
- Arrington soils in the lower positions near stream channels
- Small areas of Lindside soils in swales

Similar inclusions:
- Intermingled areas of soils that have a lighter colored surface layer
- Some concave areas that pond water during wet periods

Use and Management

Cropland

Suitability: Moderately suited; poorly suited to small grains
Limiting soil features: Flooding and soil tilth
Management measures and considerations:
- This map unit is poorly suited to small grains because of winter flooding.
- Planting crops, such as soybeans or grain sorghum, later in spring when the hazard of flooding is reduced, is recommended.
- Tillage is limited to a narrow range of moisture conditions.
- Returning crop residue to the soil helps to improve the soil condition.

Pasture and hay

Suitability: Moderately suited to pasture; well suited to hay
Limiting soil features: Flooding
Management measures and considerations:
- Swift floodwater frequently damages fences and young forage plants.
- Animals should be given access corridors to areas above the flood plain.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Moderately suited
Limiting soil features: Seedling mortality and plant competition
Management measures and considerations:
- Flooding and wetness increase seedling mortality rates.
- Floodwater can cover this map unit as long as a week during wet periods.
- In most places bedding rows can increase seedling survival rates.
- Water-toerant species should be planted.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, bedding rows, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Flooding and low strength
Management measures and considerations:
- Roads should be constructed on raised fill material above the flood plain.
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 3w

GmC—Gladdice-Mimosa complex, 5 to 15 percent slopes, rocky

Composition

Gladdice and similar soils: 30 to 50 percent
Mimosa and similar soils: 15 to 40 percent

Setting

Landscape position: Moderately steep hills where limestone outcrops cover 1 to 5 percent of the surface
Major use: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Gladdice—moderately slow; Mimosa—slow
Flood hazard: None
Available water capacity: Gladdice—low; Mimosa—moderate
Seasonal high water table: More than 6 feet
Soil reaction: Gladdice—moderately acid to mildly alkaline; Mimosa—very strongly acid to moderately acid
Shrink-swell potential: Gladdice—high; Mimosa—moderate
Depth to bedrock: Gladdice—20 to 40 inches to hard bedrock; Mimosa—40 to 60 inches to hard bedrock

Typical Profile

Gladdice

Surface layer:
0 to 8 inches—dark brown silty clay loam that has few channers and flagstones

Subsurface layer:
8 to 12 inches—brown firm silty clay that has few channers and flagstones

Subsoil:
12 to 31 inches—brown, yellowish brown, and light olive brown very firm clay that has few channers and flagstones

Bedrock:
31 inches—hard gray limestone

Mimosa

Surface layer:
0 to 3 inches—dark brown silt loam

Subsoil:
3 to 10 inches—brown silty clay loam
10 to 45 inches—dark yellowish brown and yellowish brown clay that has common mottles in shades of brown

Bedrock:
45 inches—hard gray limestone

Inclusions

Contrasting inclusions:
- In most delineations small areas of soils that are less than 20 inches or more than 60 inches deep to hard bedrock
- A few small gullies in some delineations

Similar inclusions:
- Some areas of soils that have a gravelly surface layer

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Rockiness and slope
Management measures and considerations:
- Sites on other soils should be considered.

Pasture

Suitability: Moderately suited
Limiting soil features: Rockiness
Management measures and considerations:
- Limestone bedrock is exposed in places, and farm equipment should be operated carefully in this map unit.
- Overgrazing reduces plant cover, causes erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Equipment limitation, seedling survival, and plant competition
Management measures and considerations:
- The clayey texture near the surface limits trafficability, especially during wet periods.
- Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity.
- Seedling survival rates are reduced because of the clayey texture near the surface.
- Planting large, hardy seedlings at closer spacings than typical can help in establishing stands.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Poorly suited
Limiting soil features: Depth to bedrock and shrink-swell potential

Management measures and considerations:
- Areas may require building above bedrock and landscaping with transported, additional fill material.
- Special reinforced footings and foundations help to prevent the structural damage caused by high shrinking and swelling.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Depth to bedrock and slow permeability
Management measures and considerations:
- The high clay content and depth to bedrock are limitations affecting absorption fields; specially designed systems are needed or sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Low strength and high shrink-swell potential
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.
- Blasting bedrock can be needed where deep cuts are necessary.

Interpretive Group

Capability subclass: 6e

GmE—Gladdice-Mimosa complex, 15 to 40 percent slopes, very rocky

Composition

Gladdice and similar soils: 40 to 80 percent
Mimosa and similar soils: 15 to 35 percent

Setting

Landscape position: Hillsides where limestone outcrops cover 2 to 8 percent of the surface (fig. 11)
Major use: Woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Gladdice—moderately slow; Mimosa—slow
Flood hazard: None
Available water capacity: Gladdice—low; Mimosa—moderate
Seasonal high water table: More than 6 feet
Soil reaction: Gladdice—moderately acid to mildly alkaline; Mimosa—very strongly acid to moderately acid
Shrink-swell potential: Gladdice—high; Mimosa—moderate
Depth to bedrock: Gladdice—20 to 40 inches to hard bedrock; Mimosa—40 to 60 inches to hard bedrock

Typical Profile

Gladdice

Surface layer:
0 to 8 inches—dark brown silty clay loam that has few channers and flagstones

Figure 11.—An area of Gladdice-Mimosa complex, 15 to 40 percent slopes, very rocky. This map unit is commonly on wooded hillsides with numerous limestone outcrops.

Subsurface layer:
8 to 12 inches—brown firm silty clay that has few channers and flagstones

Subsoil:
12 to 31 inches—brown, yellowish brown, and light olive brown very firm clay that has few channers and flagstones

Bedrock:
31 inches—hard gray limestone

Mimosa

Surface layer:
0 to 3 inches—dark brown silt loam

Subsoil:
3 to 10 inches—brown silty clay loam
10 to 45 inches—dark yellowish brown and yellowish brown clay that has common mottles in shades of brown

Bedrock:
45 inches—hard gray limestone

Inclusions

Contrasting inclusions:
- Areas where depth to bedrock is irregular
- In most delineations, small areas of soils that are less than 20 inches or more than 60 inches to hard bedrock
- A few small gullies in some delineations

Similar inclusions:
- Some areas of soils that have a gravelly surface layer

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Slope and rockiness
Management measures and considerations:
- Sites on other soils should be considered.

Pasture

Suitability: Not suited
Limiting soil features: Slope and rockiness
Management measures and considerations:
- Sites on other soils should be considered.

Woodland

Suitability: Moderately suited
Limiting soil features: Erosion hazard, equipment limitation, seedling mortality, and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- The slope is too steep for the safe operation of wheeled equipment across it.
- The use of track equipment or other methods may be needed.
- The clayey texture and rock outcrops limit trafficability, especially during wet periods.
- Using low-pressure ground equipment reduces damage to the soil and helps to maintain productivity.
- Seedling survival rates are reduced because of droughtiness.
- Planting large, hardy tree seedlings at closer spacings than typical can help in establishing stands.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, can reduce debris and immediate plant competition.

Dwellings

Suitability: Not suited
Limiting soil features: Depth to bedrock, slope, and shrink-swell potential
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Depth to bedrock, slope, and slow permeability
Management measures and considerations:
- The high clay content, slope, and depth to bedrock are limitations affecting absorption fields; specially designed systems are needed or sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Low strength, slope, and shrink-swell potential

Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.
- Laying out roads in the less sloping areas can reduce cutting and filling.

Interpretive Group

Capability subclass: 7e

Gu—Guthrie silt loam, ponded

Composition

Guthrie and similar soils: 85 to 95 percent

Setting

Landscape position: Depressions on both uplands and stream terraces; slopes of 0 to 2 percent
Major uses: Woodland or pasture

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderate above the fragipan and slow within the fragipan
Flood hazard: None; ponding for several weeks in winter and spring
Available water capacity: Moderate or high
Seasonal high water table: Ponded at 2 feet above the surface to 1 foot below the surface for long duration from December to May
Soil reaction: Extremely acid to strongly acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—grayish brown silt loam that has strong brown mottles

Subsurface layer:
6 to 14 inches—light gray silt loam that has yellowish brown and strong brown mottles

Subsoil:
14 to 30 inches—gray silty clay loam that has yellowish brown and strong brown mottles
30 to 60 inches—gray silty clay loam fragipan that has silty clay and strong brown mottles in seams

Inclusions

Contrasting inclusions:
- Somewhat poorly drained soils in areas slightly higher than those of the Guthrie soil

Similar inclusions:
- Some small areas of soils that have a dark surface layer

Use and Management

Cropland

Suitability: Poorly suited
Limiting soil features: Wetness and ponding

Management measures and considerations:
- In most areas excessive wetness and ponding on the surface limit cropland.
- Wetness can delay planting and harvesting.
- Some fringe areas that are already in crop production and that are not subject to ponding can be used for such short-season annuals as soybeans or grain sorghum.

Pasture and hay

Suitability: Poorly suited
Limiting soil features: Wetness and ponding
Management measures and considerations:
- In most years the excessive wetness lasts for more than 6 months.
- Grazing when the soil is wet causes surface compaction, reduces plant cover, and encourages the growth of undesirable species.
- Planting water-tolerant forages, such as tall fescue and white clover, is recommended in areas where ponding is less severe.

Woodland

Suitability: Poorly suited
Limiting soil features: Equipment limitation, seedling mortality, windthrow hazard, and plant competition
Management measures and considerations:
- The seasonal high water table restricts the use of harvesting equipment to dry periods in late summer and early fall.
- Ponding and wetness increase seedling mortality rates.
- Bedding rows and selecting water-tolerant species help to increase seedling survival rates and to reduce windthrow during windy and wet periods.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates planting.

Dwellings

Suitability: Not suited
Limiting soil features: Ponding and wetness
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Ponding, wetness, and slow permeability
Management measures and considerations:
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Low strength and ponding
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.
- Constructing roads on raised fill material with improved drainage is needed.

Interpretive Group

Capability subclass: 5w

HaC2—Hampshire silt loam, 5 to 12 percent slopes, eroded

Composition

Hampshire and similar soils: 75 to 90 percent

Setting

Landscape position: Summits and side slopes of low hills
Major uses: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Moderate
Depth to soft bedrock: 40 to 60 inches

Typical Profile

Surface layer:
0 to 6 inches—brown silt loam

Subsoil:
6 to 15 inches—strong brown silty clay loam
15 to 25 inches—strong brown firm silty clay
25 to 58 inches—strong brown firm clay

Substratum:
58 to 60 inches—soft weathered bedrock that has some hard strata

Inclusions

Contrasting inclusions:
- Small areas of soils that have a loamy subsoil and that are intermingled with the Hampshire soil
- Small areas of soils that have bedrock at a depth of more than 60 inches

Similar inclusions:
- Severely eroded areas where the subsoil is exposed at the surface
- Small areas that have slopes between 2 and 5 percent

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Conservation practices are needed to help to control erosion and to improve soil productivity.
- Minimum tillage, contour farming, and winter cover crops help to minimize runoff and control erosion.

Pasture and hay

Suitability: Well suited

Limiting soil features: None
Management measures and considerations:
- Overgrazing reduces plant cover, causes further erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited
Limiting soil features: Slope and shrink-swell potential
Management measures and considerations:
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.
- Reinforcing footings and foundations help to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Slow permeability
Management measures and considerations:
- Increasing the size of the absorption field helps to overcome the restricted permeability.
- Some mapped areas that have included soils with a loamy, more permeable subsoil are possible sites for septic tank absorption fields.

Local roads and streets

Suitability: Poorly suited
Management measures and considerations:
Limiting soil features: Low strength
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 3e

HaC3—Hampshire silty clay loam, 5 to 12 percent slopes, severely eroded

Composition

Hampshire and similar soils: 75 to 90 percent

Setting

Landscape position: Summits and side slopes of low hills
Major uses: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Moderate
Depth to soft bedrock: 40 to 60 inches

Typical Profile

Surface layer:
0 to 4 inches—dark yellowish brown silty clay loam

Subsoil:
4 to 20 inches—strong brown clay loam that has few channers of siltstone
20 to 42 inches—strong brown clay that has few brownish yellow mottles and few siltstone channers

Substratum:
42 to 50 inches—yellowish brown very channery clay loam that has seams of clay
50 to 60 inches—soft, weathered siltstone bedrock that has some hard strata of limestone

Inclusions

Contrasting inclusions:
- Small areas of soils that have a loamy subsoil and that are intermingled with the Hampshire soil
- Some areas of soils that have bedrock at a depth of more than 60 inches

Similar inclusions:
- Small areas of soils that have a silt loam surface layer

Use and Management

Cropland

Suitability: Poorly suited
Limiting soil features: Erosion hazard and the severely eroded surface layer
Management measures and considerations:
- Severe erosion has reduced the tilth, productivity, and quality of the soil.
- Further erosion is a concern if cultivated crops are grown.
- Cropping systems should include rotations in which the soil remains in grass and legumes for several seasons following cultivation.
- Conservation practices, such as minimum tillage, contour farming, and winter cover crops, are needed to help control erosion and improve soil productivity.
- High phosphate levels are common in this soil.

Pasture and hay

Suitability: Moderately suited
Limiting soil features: Erosion hazard and the severely eroded surface layer
Management measures and considerations:
- Severe erosion has reduced soil productivity and has exposed the subsoil at the surface.
- Increasing soil amendments and seeding rates ensure quality stands of forage.
- Such species as tall fescue and sericea lespedeza are adapted to severely eroded areas.

- Overgrazing reduces plant cover, causes further erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates can help to keep the soil and the forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Erosion hazard, seedling mortality, and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- The exposed subsoil reduces seedling survival rates.
- Planting large, hardy tree seedlings at closer spacings than typical can help in establishing stands.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited
Limiting soil features: Slope and shrink-swell potential
Management measures and considerations:
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.
- Reinforcing footings and foundations help to prevent the structural damage caused by shrinking and swelling.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Slow permeability
Management measures and considerations:
- Increasing the size of the absorption field helps to overcome the restricted permeability.
- Some mapped areas have included soils that have a loamy, more permeable subsoil and that are possible sites for septic tank absorption fields.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 4e

HaD3—Hampshire silty clay loam, 12 to 25 percent slopes, severely eroded

Composition

Hampshire and similar soils: 75 to 90 percent

Setting

Landscape position: Side slopes of low hills
Major uses: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Moderate
Depth to soft bedrock: 40 to 60 inches

Typical Profile

Surface layer:
0 to 4 inches—dark yellowish brown silty clay loam

Subsoil:
4 to 20 inches—strong brown clay loam that has few siltstone channers
20 to 42 inches—strong brown clay that has few brownish yellow mottles and few siltstone channers

Substratum:
42 to 50 inches—yellowish brown very channery clay loam that has seams of clay
50 to 60 inches—soft, weathered siltstone bedrock that has some hard limestone strata

Inclusions

Contrasting inclusions:
- Small, intermingled areas of soils that have a loamy subsoil
- Some areas of soils that have bedrock at a depth of more than 60 inches
- Some small areas that have deep gullies

Similar inclusions:
- Small areas that have a silt loam surface layer

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Slope and a severely eroded surface layer
Management measures and considerations:
- The slope and the very severe erosion hazard are limitations affecting cropland.

Pasture and hay

Suitability: Moderately suited to pasture; poorly suited to hay
Limiting soil features: Erosion and slope
Management measures and considerations:
- Erosion has severely reduced the tilth and productivity of this soil and has exposed the subsoil at the surface.
- Increasing soil amendments and seeding rates ensure quality forage stands.

- Such species as tall fescue and sericea lespedeza are adapted to severely eroded areas.
- The slope is too steep for the safe operation of hay harvesting and pasture maintenance equipment.
- Overgrazing reduces plant cover, causes further erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Erosion hazard, equipment limitation, seedling mortality, and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and trails.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- The slope is too steep for the safe operation of wheeled equipment across it in planting and harvesting operations.
- The exposed subsoil reduces seedling survival rates.
- Planting large, hardy tree seedlings at closer spacings than typical can help in establishing stands.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Slope and slow permeability
Management measures and considerations:
- The slope and reduced permeability increase installation costs by requiring additional field lines.
- Some mapped areas have included soils that have a loamy, more permeable subsoil and that are possible sites for septic tank absorption fields.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Slope and low strength
Management measures and considerations:
- Building roads in the less sloping areas of the map unit can reduce cutting and filling.
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 6e

HgD—Hampshire-Gullied land complex, 12 to 30 percent slopes

Composition

Hampshire and similar soils: 40 to 80 percent
Gullied land: 10 to 40 percent

Setting

Landscape position: Side slopes of low hills that have many deep gullies
Major use: Woodland

Properties and Qualities of the Hampshire Soil

Drainage class: Well drained
Permeability: Moderately slow
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Moderate
Depth to bedrock: 40 to 60 inches to soft bedrock

Typical Profile

Hampshire

Surface layer:
0 to 4 inches—dark yellowish brown silty clay loam

Subsoil:
4 to 20 inches—strong brown clay loam that has a few siltstone channers
20 to 42 inches—strong brown clay that has a few brownish yellow mottles and a few siltstone channers

Substratum:
42 to 50 inches—yellowish brown very channery clay loam that has seams of clay
50 to 60 inches—soft, weathered siltstone bedrock that has some hard limestone strata

Gullied land

This part of the map unit consists of gullies. The gullies are V-shaped, about 10 to 25 feet wide, and 3 to 7 feet deep. Their side walls and bottoms are generally yellowish brown clay. In the bottoms of some gullies, small areas of bedrock are exposed.

Inclusions

Contrasting inclusions:
- Small areas of Dellrose soils on footslopes

Similar inclusions:
- Some areas that have slopes of more than 30 percent

Use and Management

Cropland and pasture

Suitability: Not suited
Limiting soil features: Slope, gullies, and severe erosion

Management measures and considerations:
• The close network of gullies prevents access of most farm equipment.

Woodland

Suitability: Poorly suited
Limiting soil features: Erosion hazard, equipment limitation, seedling mortality, and plant competition
Management measures and considerations:
• Providing an adequate plant cover helps to control erosion on roads and skid trails.
• Roadcuts and fill areas need to be seeded to permanent plant cover.
• The close network of gullies limits the kind of equipment that can be used in forest management.
• Trees need to be hand planted.
• In some areas cable systems or other methods are needed in harvesting timber.
• Seedling survival rates are low because of the clayey textures near the surface.
• Planting large, hardy tree seedlings at closer spacings than typical can help in establishing stands.
• Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
• Site preparation, such as chopping, burning, and herbicide application, can reduce debris and immediate plant competition.

Dwellings

Suitability: Not suited
Limiting soil features: Gullies and slope
Management measures and considerations:
• Extensive site reclamation should be required for dwellings, or sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Gullies, slope, and slow permeability
Management measures and considerations:
• Deep gullies and restricted permeability are severe limitations; sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Low strength
Management measures and considerations:
• If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 7s

HsF—Hawthorne-Sulphura association, steep

Composition

Hawthorne and similar soils: 40 to 60 percent
Sulphura and similar soils: 25 to 45 percent

Setting

Landscape position: On steep, convex hillsides that have slopes of 30 to 75 percent; Hawthorne soil is on the upper part of the slope and Sulphura soil is on the lower part
Major use: Woodland

Soil Properties and Qualities

Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Flood hazard: None
Available water capacity: Low
Seasonal high water table: More than 6 feet
Soil reaction: Hawthorne—very strongly acid or strongly acid; Sulphura—strongly acid to moderately acid
Shrink-swell potential: Low
Depth to bedrock: Hawthorne—20 to 40 inches to soft bedrock; Sulphura—20 to 40 inches to hard bedrock

Typical Profile

Hawthorne

Surface layer:
0 to 3 inches—brown gravelly silt loam

Subsurface layer:
3 to 12 inches—yellowish brown gravelly silt loam

Subsoil:
12 to 26 inches—yellowish brown very gravelly silt loam

Substratum:
26 to 60 inches—alternating strata of highly fractured chert, siltstone, and thin seams of loamy soil material

Sulphura

Surface layer:
0 to 4 inches—dark brown gravelly silt loam

Subsoil:
4 to 21 inches—yellowish brown very channery silt loam

Substratum:
21 to 25 inches—weathered siltstone

Bedrock:
25 inches—hard gray siltstone

Inclusions

Contrasting inclusions:
- Small areas of soils that are shallower than 20 inches to hard bedrock and areas of rock outcrops on the steeper slopes
- Intermingled areas of Sengtown soils on the upper shoulders of hillsides and intermingled areas of well drained Minvale soils on footslopes
- Areas of Riverby and Lobelville soils along narrow drainageways
- Areas of very deep, very gravelly soils at the base of hillsides

Similar inclusions:
- Some small areas of Biffle soils

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Slope, droughtiness, and erosion hazard
Management measures and considerations:
- Sites on other soils should be considered.

Pasture and hay

Suitability: Not suited
Limiting soil features: Slope, droughtiness, and erosion hazard
Management measures and considerations:
- Sites on other soils should be considered.

Woodland

Suitability: Poorly suited
Limiting soil features: Erosion hazard, equipment limitation, seedling mortality, windthrow hazard, and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Locating roads on ridgetops or in valleys instead of on the steep hillsides helps to control erosion.
- The slope limits the kind of equipment that can be used in forest management.
- In some areas cable systems or other methods are needed in harvesting timber.
- Droughtiness, especially on south and west slopes, reduces seedling survival rates.
- Planting drought-tolerant tree species and selecting north- and east-facing slopes can help in establishing stands.
- The moderate depth to bedrock severely restricts root growth, and some trees may be uprooted during windy and wet periods.
- Planting adapted tree species and minimizing thinning help to prevent uprooting.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition.

Dwellings

Suitability: Not suited
Limiting soil features: Slope
Management measures and considerations:
- The slope is too steep for dwellings; sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Depth to bedrock and slope
Management measures and considerations:
- Sites on other soils should be considered.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- Building roads in less sloping areas can reduce cutting and filling.

Interpretive Group

Capability subclass: 7s

HuA—Humphreys gravelly silt loam, 0 to 2 percent slopes, occasionally flooded

Composition

Humphreys and similar soils: 80 to 100 percent

Setting

Landscape position: Low stream terraces
Major use: Hay and pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid in the surface layer and in the subsoil and rapid in the substratum
Flood hazard: Occasional for very brief periods from December to March
Available water capacity: Moderate
Seasonal high water table: Apparent at a depth of 5.0 to 6.0 feet from December to March
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown gravelly silt loam

Subsoil:
9 to 27 inches—brown gravelly silt loam
27 to 39 inches—yellowish brown very gravelly loam

Substratum:
39 to 60 inches—dark yellowish brown extremely gravelly sandy loam

Inclusions

Contrasting inclusions:
- Riverby and Sullivan soils in narrow strips adjacent to stream channels
- Trace soils in small areas adjacent to the Humphreys soil

Similar inclusions:
- Some slightly higher areas that are rarely flooded
- Some areas where the extremely gravelly substratum is closer to the surface than that in the Humphreys soil

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Gravelly texture and flooding
Management measures and considerations:
- In some areas the content of gravel in the surface layer hinders tillage equipment and causes droughtiness.

- In some years flooding occasionally damages small grains planted in fall.
- Returning crop residue to the soil helps to maintain the soil condition.

Pasture and hay

Suitability: Well suited
Limiting soil features: Droughtiness
Management measures and considerations:
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.
- Droughtiness reduces forage yields and lowers the response to fertilizers.

Woodland

Suitability: Well suited
Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Flooding is a severe limitation; sites on other soils should be considered.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Flooding
Management measures and considerations:
- Flooding is a severe limitation; sites on other soils should be considered.
- In some mapped areas higher spots that flood less often are more suitable for dwellings.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Flooding
Management measures and considerations:
- Roads should be constructed on raised fill material above the flood plain.

Interpretive Group

Capability subclass: 2w

HuB—Humphreys gravelly silt loam, 2 to 5 percent slopes

Composition

Humphreys and similar soils: 75 to 90 percent

Setting

Landscape position: Stream terraces and alluvial fans
Major use: Pasture and cropland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately rapid in the surface layer and in the subsoil and rapid in the substratum
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: Apparent at a depth of 5.0 to 6.0 feet from December to March
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 9 inches—dark yellowish brown gravelly silt loam

Subsoil:
9 to 27 inches—brown gravelly silt loam
27 to 39 inches—yellowish brown very gravelly loam

Substratum:
39 to 60 inches—dark yellowish brown extremely gravelly sandy loam

Inclusions

Contrasting inclusions:
- Areas of Trace soils along the edges of alluvial fans
- Riverby and Sullivan soils in narrow strips along drainageways

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Rock fragments in the surface layer and the subsoil
Management measures and considerations:
- In some areas the content of gravel in the surface layer hinders tillage equipment and causes droughtiness.
- A suitable conservation system helps to control erosion and to increase soil moisture.

Pasture and hay

Suitability: Well suited
Limiting soil features: Droughtiness
Management measures and considerations:
- Droughtiness reduces forage yields and lowers the response to fertilizers during dry periods.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.

- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited; poorly suited to dwellings with basements
Limiting soil features: Wetness in the lower part of the subsoil
Management measures and considerations:
- Basements with a special design can help to prevent seepage of ground water.
- Subsurface tile drains and landshaping help to remove excess water.

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Wetness in the lower part of the subsoil
Management measures and considerations:
- In some areas filter fields can require special measures to reduce seepage from adjacent hillsides during the wetter periods of the year.

Local roads and streets

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- The lower part of this soil is a probable source of roadfill.

Interpretive Group

Capability subclass: 2e

LaB—Lax silt loam, 2 to 5 percent slopes

Composition

Lax soil and similar soils: 80 to 100 percent

Setting

Landscape position: Slightly convex ridgetops capped with thin loess and gravelly alluvial deposits
Major use: Woodland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: Perched at a depth of 1.5 to 2.5 feet from December to March
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low in the upper part of the soil and moderate below the fragipan
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—brown silt loam

Subsurface layer:
2 to 10 inches—yellowish brown silt loam

Subsoil:
10 to 27 inches—strong brown and yellowish brown silt loam
27 to 41 inches—yellowish brown gravelly silt loam fragipan that has strong brown and light brownish gray mottles
41 to 50 inches—mottled strong brown, light yellowish brown, and light brownish gray gravelly silty clay loam fragipan
50 to 60 inches—red gravelly silty clay loam that has strong brown and light brownish gray mottles

Inclusions

Contrasting inclusions:
- Some areas of Mountview soils intermingled with the Lax soil

Similar inclusions:
- In the more sloping parts of the map unit, areas of soils that have a gravelly surface layer

Use and Management

Cropland

Suitability: Well suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Erosion is a hazard if cultivated crops are grown.
- Conservation practices are needed to control erosion and to maintain soil productivity.
- Excessive rates of erosion can result in dense subsoil material becoming exposed at or near the surface.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.
- Returning crop residue to the soil helps to improve the soil condition.

Pasture and hay

Suitability: Well suited to most grasses and legumes; not suited to alfalfa
Limiting soil features: Fragipan and a perched water table
- A dense fragipan in the subsoil and a perched seasonal high water table restrict the rooting depth of such legumes as alfalfa.

Management measures and considerations:
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Moderately suited
Limiting soil features: Windthrow hazard and plant competition
Management measures and considerations:
- Some trees may be uprooted during windy and wet periods.
- Planting trees that have a shallow root system and minimizing thinning help to prevent uprooting.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited; not suited to buildings with basements
Limiting soil features: Perched water table during wet periods
Management measures and considerations:
- Subsurface tile drains and landshaping help to remove excess water.
- Because of the wetness, sites on other soils should be considered for dwellings with basements.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Slow permeability and a perched water table during wet periods
Management measures and considerations:
- Most mapped areas have small inclusions of better drained soils, which should be located and, if feasible, used.
- Sites on other soils should be considered.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 2e

LaC—Lax silt loam, 5 to 12 percent slopes

Composition

Lax soil and similar soils: 65 to 80 percent

Setting

Landscape position: Slightly convex ridgetops that are capped with thin loess and gravelly alluvial deposits
Major use: Woodland

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: Perched at a depth of 1.5 to 2.5 feet from December to March
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low in the upper part of the soil and moderate below the fragipan
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—brown silt loam

Subsurface layer:
2 to 10 inches—yellowish brown silt loam

Subsoil:
10 to 27 inches—strong brown and yellowish brown silt loam
27 to 41 inches—yellowish brown gravelly silt loam fragipan that has strong brown and light brownish gray mottles
41 to 50 inches—mottled strong brown, light yellowish brown, and light brownish gray gravelly silty clay loam fragipan
50 to 60 inches—red gravelly silty clay loam that has strong brown and light brownish gray mottles

Inclusions

Contrasting inclusions:
- Some intermingled areas of Mountview soils

Similar inclusions:
- In the more sloping parts of the map unit, areas of soils that have a gravelly surface layer

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Erosion is a severe hazard if cultivated crops are grown.
- Conservation practices are needed to control erosion and to maintain soil productivity.
- Excessive rates of erosion can result in dense subsoil material becoming exposed at or near the surface.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.
- Returning crop residue to the soil helps to improve the soil condition.

Pasture and hay

Suitability: Well suited to most grasses and legumes; not suited to alfalfa
Limiting soil features: Restricted rooting depth
Management measures and considerations:
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Moderately suited
Limiting soil features: Erosion hazard, windthrow hazard, and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Roadcuts and fill areas need to be seeded to a permanent plant cover.
- Some trees may be uprooted during windy and wet periods.
- Planting trees that have a shallow root system and minimizing thinning help to prevent uprooting.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited; not suited to buildings with basements
Limiting soil features: Slope and a perched water table during wet periods
Management measures and considerations:
- Subsurface tile drains and landshaping help to remove excess water.
- In some areas, landshaping is needed in site preparation or buildings need to be designed to conform to the natural slope.
- Because of the wetness, sites on other soils should be considered for dwellings with basements.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: A perched water table during wet periods and slow permeability
Management measures and considerations:
- Most mapped areas have inclusions of better drained, more permeable soils, which should be located and, if feasible, used.
- Sites on other soils should be considered.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 3e

Ln—Lindside silt loam, frequently flooded

Composition

Lindside and similar soils: 60 to 75 percent

Setting

Landscape position: Lower areas on the flood plain of the Duck River and some of its tributaries; slopes of 0 to 2 percent
Major use: Cropland (corn and soybeans); some areas of pasture and hay

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Flood hazard: Frequent for brief periods from December to May
Available water capacity: High
Seasonal high water table: Apparent at a depth of 1.5 to 3 feet from December to May
Soil reaction: Slightly acid or neutral
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 12 inches—dark yellowish brown and brown silt loam that has strong brown mottles in root channels

Subsoil:
12 to 37 inches—brown silt loam that has grayish brown mottles and strong brown mottles in root channels
37 to 55 inches—dark grayish brown silt loam that has light olive brown mottles and strong brown mottles in root channels
55 to 63 inches—mottled, light grayish brown and yellowish brown silty clay loam that has strong brown mottles

Inclusions

Contrasting inclusions:
- Small areas of Arrington and Gam soils that are in slightly higher positions on flood plains

Similar inclusions:
- Somewhat poorly drained soils in concave areas
- Some areas that are ponded during wet periods

Use and Management

Cropland

Suitability: Moderately suited; poorly suited to small grains
Limiting soil features: Flooding
Management measures and considerations:
- In some years wetness delays spring tillage and fall harvest.
- Subsurface tile drains and surface ditches help to remove excess water in wet areas.
- Flooding occasionally damages cultivated crops.

Pasture and hay

Suitability: Moderately suited
Limiting soil features: Flooding and wetness
Management measures and considerations:
- Grazing when the soil is wet causes surface compaction, reduces plant cover, and encourages the growth of undesirable species.
- Swift floodwater frequently damages fences and young forage plants.
- Animals should be given access corridors to areas above the flood plain.

Woodland

Suitability: Moderately suited
Limiting soil features: Equipment limitation, seedling mortality, and plant competition
Management measures and considerations:
- The seasonal high water table restricts the use of equipment to periods when the soil is dry.
- Logging roads require suitable surfacing for year-round use.
- The flooding and wetness increase seedling mortality rates.
- Floodwater can cover this map unit for nearly a week during wet periods.
- Some lower-lying areas are ponded for several days after flood events.
- Planting water-tolerant species and bedding rows can help to increase seedling survival rates.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, bedding rows, and herbicide application, reduces debris and immediate plant competition and facilitates planting.

Dwellings

Suitability: Not suited

Limiting soil features: Flooding
Management measures and considerations:
• Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Flooding and wetness
Management measures and considerations:
• Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Flooding and low strength
Management measures and considerations:
• Roads should be constructed on raised fill material above the flood plain.
• If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 3w

Lo—Lobelville silt loam, occasionally flooded

Composition

Lobelville and similar soils: 85 to 95 percent

Setting

Landscape position: Flood plains
Major use: Pasture

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Flood hazard: Occasional for very brief periods from December to April
Available water capacity: High
Seasonal high water table: Apparent at a depth of 2 to 3 feet from December to April
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown silt loam

Subsurface layer:
6 to 12 inches—dark yellowish brown silt loam that has some gravel

Subsoil:
12 to 19 inches—yellowish brown silt loam that has pale brown mottles and some gravel
19 to 26 inches—pale brown gravelly silt loam that has light brownish gray mottles
26 to 38 inches—light brownish gray gravelly silt loam that has yellowish brown and reddish yellow mottles
38 to 52 inches—grayish brown extremely gravelly loam

Substratum:
52 to 60 inches—grayish brown extremely gravelly sandy loam

Inclusions

Contrasting inclusions:
- Narrow strips of Sullivan and Humphreys soils in positions that are slightly higher than those of the Lobelville soil
- Melvin soils in small, concave positions
- Narrow strips of Riverby soils near creek channels

Similar inclusions:
- Small areas of soils that have a gravelly surface layer

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Flooding
Management measures and considerations:
- Wetness can delay spring tillage and fall harvest.
- Occasional flooding damages cultivated crops.

Pasture and hay

Suitability: Well suited
Limiting soil features: Wetness and flooding
Management measures and considerations:
- Grazing when the soil is wet causes surface compaction, reduces plant cover, and encourages the growth of undesirable species.
- Swift floodwater occasionally damages fences.
- Animals should be given access corridors to areas above the flood plain.

Woodland

Suitability: Well suited
Limiting soil features: Equipment limitation, seedling mortality, and plant competition
Management measures and considerations:
- The seasonal high water table restricts the use of equipment to periods when the soil is dry.
- Logging roads require suitable surfacing for year-round use.
- Flooding and wetness increase seedling mortality rates.
- Bedding rows can help to increase seedling survival rates.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates planting.

Dwellings

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Flooding and wetness

Management measures and considerations:
• Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Flooding and low strength
Management measures and considerations:
• Roads should be constructed on raised fill material above the flood plain.
• If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 2w

Me—Melvin silt loam, frequently flooded

Composition

Melvin and similar soils: 85 to 95 percent

Setting

Landscape position: Flood plains
Major use: Wetland wildlife habitat (common plants are sedges, rushes, tall fescue, buttonbush, and canow); some areas of pasture

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderate
Flood hazard: Frequent for long duration from December to May
Available water capacity: High
Seasonal high water table: Apparent at a depth of 0 to 1 foot from December to May
Soil reaction: Moderatey acid to neutral
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—grayish brown silt loam that has gray and yellowish brown mottles and few rounded pebbles

Subsoil:
6 to 46 inches—gray silt loam that has strong brown mottles and few rounded pebbles

Substratum:
46 to 60 inches—gray silty clay loam that has strong brown and light yellowish brown mottles

Inclusions

Contrasting inclusions:
• Narrow strips of Lobelville soils in slightly higher positions
Similar inclusions:
• Small areas of soils that have a gravelly surface layer

Use and Management

Cropland

Suitability: Poorly suited
Limiting soil features: Flooding
Management measures and considerations:
- The seasonal high water table can delay planting and harvesting until late spring or early summer.
- In dry years such late season annuals as soybeans and grain sorghum can be grown.

Pasture and hay

Suitability: Poorly suited
Limiting soil features: Wetness and flooding
Management measures and considerations:
- In most years this soil is subject to flooding and remains wet for more than 6 months.
- Grazing when the soil is wet causes surface compaction, reduces plant cover, and encourages the growth of undesirable species.
- Water-tolerant forages, such as tall fescue and white clover, are recommended.
- Swift floodwater occasionally damages fences and young forage plants.
- Animals should be given access corridors to areas above the flood plain.

Woodland

Suitability: Poorly suited
Limiting soil features: Equipment limitation, seedling mortality, windthrow hazard, and plant competition
Management measures and considerations:
- The seasonal high water table restricts the use of equipment to late summer and early fall when the soil is driest.
- Flooding and wetness increase seedling mortality rates.
- Bedding rows and planting water-tolerant species can help to increase seedling survival rates.
- Some trees may be uprooted during windy periods.
- Planting adapted species, bedding rows, and minimizing thinning help to prevent uprooting.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates planting.

Dwellings

Suitability: Not suited
Limiting soil features: Flooding and wetness
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Flooding and wetness
Management measures and considerations:
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited

Limiting soil features: Flooding and low strength
Management measures and considerations:
- Roads should be constructed on raised fill material above the flood plain.
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 5w

MnD—Minvale gravelly silt loam, 12 to 20 percent slopes

Composition

Minvale and similar soils: 75 to 90 percent

Setting

Landscape position: Moderately steep footslopes
Major use: Woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—dark yellowish brown gravelly silt loam

Subsoil:
6 to 15 inches—strong brown gravelly silty clay loam
15 to 30 inches—strong brown gravelly silty clay loam that has brownish and reddish mottles
30 to 60 inches—yellowish red gravelly silty clay loam that has brownish mottles

Inclusions

Contrasting inclusions:
- Moderately well drained Tarklin soils intermingled with the Minvale soil on footslopes

Similar inclusions:
- Small areas of Humphreys soils on footslopes

Use and Management

Cropland

Suitability: Poorly suited
Limiting soil features: Erosion hazard and slope
Management measures and considerations:
- Areas used as cropland should be cultivated only on the contour using a rotation in which the land remains in sod for several seasons following cultivation.

- Such practices as no-till and contour stripcropping help to minimize runoff and control erosion.

Pasture and hay

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- The slope is too steep on parts of the map unit for the safe operation of hay harvesting and pasture maintenance equipment.
- The slope increases the hazard of erosion if plants are overgrazed or plant stands are poor.
- Pasture renovation can be needed when the better forage plants have decreased to levels less than needed for optimum production.
- Stocking should be adjusted to prevent overgrazing and to help reduce the risk of water erosion.
- Rotating grazing, controlling weeds, and applying fertilizer annually can maintain the quality and quantity of forage.

Woodland

Suitability: Well suited
Limiting soil features: Erosion hazard and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- The slope can increase installation costs by requiring additional field lines.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- Building roads in the less sloping areas can reduce cutting and filling.

Interpretive Group

Capability subclass: 4e

MsD3—Minvale silty clay loam, 12 to 30 percent slopes, severely eroded

Composition

Minvale and similar soils: 75 to 85 percent

Setting

Landscape position: Stream terrace escarpments
Major use: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 5 inches—dark yellowish brown silty clay loam

Subsoil:
5 to 9 inches—strong brown gravelly silty clay loam
9 to 28 inches—red gravelly silty clay loam
28 to 60 inches—red gravelly silty clay loam that has few brown mottles

Inclusions

Contrasting inclusions:
- Areas of soils that have a very gravelly surface layer and subsoil
- Areas of Pickwick soils intermingled with the Minvale soil

Similar inclusions:
- Some small areas of soils that have a silt loam surface layer
- Some areas of Minvale soils underlain by clayey residuum

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Erosion and slope
Management measures and considerations:
- Erosion has severely reduced soil tilth and productivity.
- In some areas slopes are too steep for the safe operation of farm equipment.

Pasture and hay

Suitability: Moderately suited to pasture; poorly suited to hay
Limiting soil features: Erosion and slope
Management measures and considerations:
- Erosion has severely reduced soil productivity and has exposed the subsoil at the surface.
- Increasing soil amendments and seeding rates ensures good quality forage stands.

- Such species as tall fescue and sericea lespedeza are adapted to this map unit.
- The slope is too steep in most areas of the map unit for the safe operation of hay harvesting and pasture maintenance equipment.
- Overgrazing reduces plant cover, causes further erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.
- North-facing exposures are cooler and moister and thus produce more forage than south-facing exposures.

Woodland

Suitability: Moderately suited
Limiting soil features: Equipment limitation, seedling survival, and plant competition
Management measures and considerations:
- The slope is too steep for the safe operation of wheeled equipment across it in planting and harvesting operations.
- The exposed subsoil reduces seedling survival rates on south-facing slopes, which are warmer and drier than north-facing slopes.
- Planting large, hardy seedlings at closer spacings than typical can help in establishing stands.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- The slope can increase installation costs by requiring additional field lines.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- Building roads in the less sloping areas can reduce cutting and filling.

Interpretive Group

Capability subclass: 6e

MtB—Mountview silt loam, 2 to 5 percent slopes

Composition

Mountview soil and similar soils: 70 to 100 percent

Setting

Landscape position: Upland ridgetops
Major use: Pasture and hay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: High
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low in upper part of the subsoil and moderate in the lower part
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—brown silt loam

Subsoil:
6 to 25 inches—strong brown silty clay loam
25 to 35 inches—strong brown silty clay loam that has few red mottles and light yellowish brown silt loam pockets
35 to 60 inches—red gravelly silty clay that has yellowish brown, strong brown, and light brownish gray mottles

Inclusions

Contrasting inclusions:
- Small areas of Lax soils on upland ridgetops
- Small areas of Dickson soils in saddles
- Narrow strips of Sengtown soils in more sloping areas

Similar inclusions:
- Some small areas of soils that are similar to the Mountview soil but that have a gravelly subsoil

Use and Management

Cropland

Suitability: Well suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Erosion is a hazard if cultivated crops are grown.
- Conservation practices are needed to control erosion and to maintain soil productivity.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.
- Returning crop residue to the soil helps to improve the soil condition.

Pasture and hay

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Well suited
Limiting soil features: Moderate shrink-swell potential
Management measures and considerations:
- Reinforcing footings and foundations helps to prevent the structural damage caused by moderate shrinking and swelling in deep cuts.

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Restricted permeability
Management measures and considerations:
- Increasing the size of the absorption field helps to overcome the restricted permeability.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 2e

Nr—Norene silt loam, ponded

Composition

Norene and similar soils: 90 to 100 percent

Setting

Landscape position: Depressions on low stream terraces
Major use: Pasture; wetland wildlife habitat

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderate in the upper part of the soil and moderately slow in the lower part
Flood hazard: Rare for brief duration from December to March
Available water capacity: High
Seasonal high water table: Ponded at 2 feet above the surface to a depth of 1 foot below the surface for long duration from December to May
Soil reaction: Strongly acid to neutral

Shrink-swell potential: Low in the upper 53 inches and moderate below a depth of 53 inches
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—dark grayish brown silt loam that has few yellowish red mottles

Subsurface layer:
6 to 18 inches—light grayish brown and light brownish gray silt loam that has yellowish red, yellowish brown, and light olive mottles

Subsoil:
18 to 53 inches—dark gray silty clay loam that has brown, strong brown, and yellowish red mottles

Substratum:
53 to 60 inches—dark gray clay that has brown mottles

Inclusions

Contrasting inclusions:
- Areas of soils that have a clayey subsoil intermingled with the Norene soil

Similar inclusions:
- Some areas that have a thin, black surface layer

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Wetness
Management measures and considerations:
- Because excessive wetness and ponding last for several weeks at a time, this soil is not suited to row crops.

Pasture and hay

Suitability: Poorly suited
Limiting soil features: Wetness
Management measures and considerations:
- In most years this soil is wet for 6 months or more.
- Grazing when the soil is wet causes surface compaction, reduces plant cover, and encourages the growth of undesirable species.
- Water-tolerant forages, such as tall fescue and white clover, are recommended.

Woodland

Suitability: Poorly suited
Limiting soil features: Equipment limitation, seedling mortality, windthrow hazard, and plant competition
Management measures and considerations:
- Ponding and the seasonal high water table restrict the use of equipment to periods in late summer and early fall when the soil is driest.
- Ponding and wetness increase seedling mortality rates.
- Planting adapted species and bedding rows help to increase seedling survival rates.
- The moderate depth to the fragipan restricts root growth.
- Some trees may be uprooted during windy periods.
- Minimizing thinning helps to prevent uprooting.

- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates planting.

Dwellings

Suitability: Not suited
Limiting soil features: Flooding, ponding, and wetness
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Ponding and slow permeability
Management measures and considerations:
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Ponding
Management measures and considerations:
- Roads should be constructed on raised fill material with improved drainage.
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 5w

PaB—Paden silt loam, 1 to 5 percent slopes

Composition

Paden soil and similar soils: 80 to 100 percent

Setting

Landscape position: Stream terraces
Major use: Pasture, hay, and cropland (fig. 12)

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow in the fragipan
Flood hazard: None
Available water capacity: Moderate or high
Seasonal high water table: Perched at a depth of 1.5 to 3 feet from December to March
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—brown silt loam

Figure 12.—An area of Paden silt loam, 1 to 5 percent slopes. This soil is well suited to most common crops and forages, except alfalfa. The soil has a fragipan that restricts the movement of both water and roots.

Subsoil:
6 to 25 inches—dark yellowish brown and yellowish brown silt loam and silty clay loam
25 to 33 inches—light olive brown and light gray silt loam that has brownish yellow mottles
33 to 41 inches—light olive brown silt loam fragipan that has brownish yellow and gray mottles
41 to 60 inches—yellowish red gravelly clay loam that has yellowish brown, red, and gray mottles

Inclusions

Contrasting inclusions:
- Somewhat poorly drained soils in concave areas
- Pickwick soils in higher areas

Similar inclusions:
- Some areas of soils that have a gravelly fragipan

Use and Management

Cropland

Suitability: Well suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Erosion is a hazard if cultivated crops are grown.

- Conservation practices are needed to control erosion and to maintain soil productivity.
- Excessive rates of erosion can result in dense subsoil material being exposed at or near the surface.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.
- Returning crop residue to the soil helps to improve the soil condition.

Pasture and hay

Suitability: Well suited to most grasses and legumes; not suited to alfalfa
Limiting soil features: Restricted rooting depth
Management measures and considerations:
- The very firm part of the subsoil and the seasonal high water table restrict the root growth of some legumes.
- Short-lived stands of alfalfa are common.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and forage in good condition.

Woodland

Suitability: Moderately suited
Limiting soil features: Windthrow hazard and plant competition
Management measures and considerations:
- The moderate depth to the fragipan restricts root growth.
- Some trees may be uprooted during windy and wet periods.
- Planting trees that have a shallow root system and minimizing thinning help to prevent uprooting.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited to dwellings without basements; poorly suited to dwellings with basements
Limiting soil features: A perched water table during wet periods
Management measures and considerations:
- Subsurface tile drains and landshaping help to remove excess water.
- Basements need to be waterproofed.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: A perched water table during wet periods and restricted permeability
Management measures and considerations:
- In some mapped areas, there are small areas of more permeable soils that are more suitable for septic tank absorption fields.
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 2e

PaC2—Paden silt loam, 5 to 12 percent slopes, eroded

Composition

Paden soil and similar soils: 70 to 100 percent

Setting

Landscape position: Linear or slightly convex slopes on stream terraces
Major use: Pasture

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow within the fragipan
Flood hazard: None
Available water capacity: Moderate or high
Seasonal high water table: Perched at a depth of 1.5 to 3 feet from December to March
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 4 inches—brown silt loam

Subsoil:
4 to 23 inches—dark yellowish brown and yellowish brown silt loam and silty clay loam
23 to 33 inches—light olive brown and light gray silt loam that has brownish yellow mottles
33 to 41 inches—light olive brown silt loam fragipan that has brownish yellow and gray mottles
41 to 60 inches—yellowish red gravelly clay loam that has yellowish brown, red, and gray mottles

Inclusions

Contrasting inclusions:
- Pickwick soils in higher areas

Similar inclusions:
- Some areas that have a gravelly fragipan
- Some small areas that are severely eroded and that have a fragipan within a depth of 18 inches

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Severe erosion hazard
Management measures and considerations:
- Erosion is a major hazard if cultivated crops are grown.
- Conservation practices are needed to control erosion and to maintain soil productivity.

- Excessive rates of erosion can result in dense subsoil material being exposed at or near the surface.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.
- Returning crop residue to the soil helps to improve the soil condition.

Pasture and hay

Suitability: Well suited to most grasses and legumes; not suited to alfalfa
Limiting soil features: A dense fragipan in the subsoil and a perched seasonal high water table restrict the rooting depth of such legumes as alfalfa.
Management measures and considerations:
- The very firm part of the subsoil and the seasonal high water table restrict the root growth of some legumes, such as alfalfa.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and forage in good condition.

Woodland

Suitability: Moderately suited
Limiting soil features: Erosion hazard, windthrow hazard, and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Roadcuts and fill areas need to be seeded to a permanent plant cover.
- Some trees may be uprooted during windy and wet periods.
- Planting trees that have a shallow root system and minimizing thinning help to prevent uprooting.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited to dwellings without basements; not suited to dwellings with basements
Limiting soil features: Wetness caused by a perched water table during wet periods
Management measures and considerations:
- Subsurface tile drains help to remove excess water.
- In some areas, landshaping is needed in site preparation or buildings need to be designed to conform to the natural slope.
- Because of the wetness, sites on other soils should be considered for dwellings with basements.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: A perched water table during wet periods and restricted permeability in the fragipan
Management measures and considerations:
- Some mapped areas that contain small inclusions of better drained, more permeable soils should be located and, if feasible, used.
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Low strength
Management measures and considerations:

- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 3e

PkB—Pickwick silt loam, 2 to 5 percent slopes

Composition

Pickwick soil and similar soils: 90 to 100 percent

Setting

Landscape position: Gently sloping high stream terraces
Major use: Cropland and hay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: High
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 16 inches—strong brown silty clay loam
16 to 41 inches—yellowish red silty clay loam
41 to 118 inches—red silty clay or clay

Inclusions

Contrasting inclusions:
- Paden soils in small, concave areas
- Some shallow depressions that have a thick, silty surface layer
- Minvale soils in steeper areas near the edge of the map unit

Similar inclusions:
- Armour soils in some terrace positions that are lower than those of the Pickwick soil

Use and Management

Cropland

Suitability: Well suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Erosion is a hazard if cultivated crops are grown.
- Conservation practices are needed to control erosion and to maintain soil productivity.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.
- Returning crop residue to the soil helps to improve the soil condition.

Pasture and hay

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- In most areas the soil is well suited to dwellings with basements.

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Moderate permeability
Management measures and considerations:
- Increasing the size of the absorption field helps to overcome the restricted permeability.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 2e

PkC2—Pickwick silt loam, 5 to 12 percent slopes, eroded

Composition

Pickwick and similar soils: 80 to 100 percent

Setting

Landscape position: Sloping, high stream terraces
Major use: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None

Available water capacity: High
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 7 inches—dark yellowish brown silt loam

Subsoil:
7 to 14 inches—strong brown silty clay loam
14 to 36 inches—yellowish red silty clay loam
36 to 60 inches—dark red silty clay

Inclusions

Contrasting inclusions:
- Paden soils in small, low areas
- Minvale soils on more convex slopes

Similar inclusions:
- Armour soils in some lower areas

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Severe erosion hazard
Management measures and considerations:
- Erosion is a severe hazard if cultivated crops are grown.
- Conservation practices are needed to control erosion and maintain soil productivity.
- No-till farming, minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.
- Returning crop residue to the soil helps to maintain the soil condition.

Pasture and hay

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- Overgrazing reduces plant cover, causes erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates can help to keep the soil and the forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Erosion hazard and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- In some areas, landshaping is needed in site preparation or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Moderate permeability
Management measures and considerations:
- Increasing the size of the absorption field helps to overcome the restricted permeability.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 3e

PkC3—Pickwick silty clay loam, 5 to 12 percent slopes, severely eroded

Composition

Pickwick and similar soils: 75 to 85 percent

Setting

Landscape position: Sloping, high stream terraces
Major use: Pasture (fig. 13)

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—strong brown silty clay loam

Subsoil:
2 to 14 inches—yellowish red silty clay loam
14 to 40 inches—dark red silty clay loam
40 to 60 inches—dark red silty clay

Figure 13.—An area of Pickwick silty clay loam, 5 to 12 percent slopes, severely eroded. This soil is well suited to forages such as tall fescue.

Inclusions

Contrasting inclusions:
- Areas of Minvale soils on convex slopes

Similar inclusions:
- Some areas where slopes are more than 12 percent
- Areas of less eroded Pickwick soils, which have a silt loam surface layer

Use and Management

Cropland

Suitability: Poorly suited
Limiting soil features: Erosion hazard and a severely eroded surface layer
Management measures and considerations:
- Erosion has severely reduced the productivity and condition of this soil.
- Erosion is a hazard if cultivated crops are grown.
- Conservation practices are needed to control erosion and improve soil productivity.
- Cropping systems should include rotations in which the soil remains in legumes for several seasons following cultivation.

Pasture and hay

Suitability: Moderately suited
Limiting soil features: The severely eroded surface layer and erosion hazard
Management measures and considerations:
- Conventional seedbeds are more difficult to prepare and forage yields are lower on this soil than on the less eroded Pickwick soils.
- Increasing soil amendments and seeding rates ensures quality forage stands.

- Such species as tall fescue and sericea lespedeza are adapted to severely eroded areas.
- Overgrazing reduces plant cover, causes further erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates help to improve the soil condition.

Woodland

Suitability: Moderately suited
Limiting soil features: Erosion hazard, seedling mortality, and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- The exposed subsoil reduces seedling survival rates.
- Planting large, hardy tree seedlings at closer spacings than typical can help in establishing stands.
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- In some areas, landshaping is needed for site preparation or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Moderate permeability
Management measures and considerations:
- Increasing the size of the absorption field helps to overcome the restricted permeability.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 4e

Ra—Riverby gravelly sandy loam, frequently flooded

Composition

Riverby and similar soils: 50 to 70 percent

Setting

Landscape position: Narrow flood plains that have slopes of 0 to 3 percent
Major use: Pasture and woodland

Soil Properties and Qualities

Drainage class: Excessively drained
Permeability: Rapid
Flood hazard: Frequent for very brief or brief periods from November to June
Available water capacity: Low or very low
Seasonal high water table: Apparent at a depth of 4.0 to 5.0 feet from December to April
Soil reaction: Moderately acid to neutral
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 5 inches—dark brown gravelly sandy loam

Subsurface layer:
5 to 12 inches—brown gravelly sandy loam

Substratum:
12 to 17 inches—dark yellowish brown extremely gravelly loamy sand
17 to 21 inches—dark yellowish brown very gravelly loam
21 to 43 inches—dark yellowish brown extremely gravelly coarse sandy loam
43 to 60 inches—dark yellowish brown extremely gravelly coarse sandy loam

Inclusions

Contrasting inclusions:
- Sullivan and Humphreys soils on slightly higher parts of the flood plain
- Lobelville soils in small, seep areas
- Areas of unvegetated, extremely gravelly riverwash on natural levees adjacent to larger streams

Similar inclusions:
- Intermingled areas, along large streams, of sandy soils that have less gravel
- Areas that are subject to rare flooding
- Some areas that have a gravelly silt loam or gravelly loam surface layer

Use and Management

Cropland

Suitability: Poorly suited
Limiting soil features: Excessive gravel in the surface layer and the substratum and frequent flooding
Management measures and considerations:
- The content of gravel in the surface layer and the substratum hinders tillage equipment and causes droughtiness.
- Yields for most crops are low.
- Flooding damages most crops and adds additional deposits of gravel to areas in crops.

Pasture and hay

Suitability: Moderately suited
Limiting soil features: Droughtiness
Management measures and considerations:
- The droughtiness reduces forage yields and lowers the response to fertilizers.
- Selecting drought-tolerant species is recommended.

- Swift floodwater can damage fences and young forage plants.
- Animals should be given access corridors to areas above flood plains.

Woodland

Suitability: Moderately suited
Limiting soil features: Seedling mortality and plant competition
Management measures and considerations:
- The droughtiness reduces seedling survival rates.
- Planting large, hardy tree seedlings and bedding rows can help in establishing stands.
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Flooding is a hazard every year in most mapped areas.
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Flooding is a hazard in most years.
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Flooding
Management measures and considerations:
- Flash flooding can cause hazardous road conditions.
- Roads can be constructed above the flood zone on raised fill material.

Interpretive Group

Capability subclass: 4s

SaD—Saffell gravelly fine sandy loam, 12 to 20 percent slopes

Composition

Saffell and similar soils: 75 to 90 percent

Setting

Landscape position: Convex hillsides
Major use: Woodland and pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate or moderately rapid

Flood hazard: None
Available water capacity: Low
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 4 inches—brown gravelly fine sandy loam

Subsurface layer:
4 to 13 inches—yellowish brown gravelly fine sandy loam

Subsoil:
13 to 37 inches—strong brown very gravelly clay loam

Substratum:
37 to 60 inches—strong brown very gravelly sandy loam

Inclusions

Contrasting inclusions:
- Sengtown and Biffle soils on the lower parts of some hillsides
- Small areas of Lax soils on shoulder slopes
- Humphreys and Tarklin soils in small, colluvial positions

Similar inclusions:
- Some areas of soils that are similar to the Saffell soil but that have a very gravelly surface layer

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Slope, low available water capacity, and low fertility
Management measures and considerations:
- Sites on other soils should be considered.

Pasture and hay

Suitability: Poorly suited
Limiting soil features: Droughtiness and slope
Management measures and considerations:
- Overgrazing reduces plant cover, causes erosion, and encourages undesirable plant species.
- Deferred grazing, rotational grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.
- The slope is too steep for safe operation of hay harvesting equipment.

Woodland

Suitability: Moderately suited
Limiting soil features: Erosion hazard, equipment limitation, seedling survival, and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- The slope is steep enough that special safety precautions are needed when crossing the slope with wheeled equipment.

- The content of gravel causes droughtiness and reduces seedling survival rates.
- Droughtiness and seedling survival can be partly overcome by selecting drought-tolerant species, increasing tree planting rates, and planting on moister, north- and east-facing slopes.
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such burning and herbicide application, reduces immediate plant competition.

Dwellings

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- The slope can increase installation costs by requiring more field lines.
- On steep slopes, untreated effluent can move laterally, seep in downslope areas, and create a health hazard.
- Specially designed systems may be needed.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- Building roads in the less sloping areas can reduce cutting and filling.

Interpretive Group

Capability subclass: 6e

SaF—Saffell gravelly fine sandy loam, 20 to 60 percent slopes

Composition

Saffell and similar soils: 85 to 95 percent

Setting

Landscape position: Convex hillsides
Major use: Woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate or moderately rapid
Flood hazard: None
Available water capacity: Low
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid or strongly acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 4 inches—brown gravelly fine sandy loam

Subsurface layer:
4 to 13 inches—yellowish brown gravelly fine sandy loam

Subsoil:
13 to 37 inches—strong brown very gravelly clay loam

Substratum:
37 to 60 inches—strong brown very gravelly sandy loam

Inclusions

Contrasting inclusions:
- Areas of Sengtown and Biffle soils on the lower parts of some hillsides
- Humphreys and Tarklin soils in small, colluvial positions

Similar inclusions:
- Some areas of soils that are similar to the Saffell soil but that have a gravelly surface layer

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Slope, low available water capacity, and low fertility
Management measures and considerations:
- Sites on other soils should be considered.

Pasture and hay

Suitability: Not suited
Limiting soil features: Slope, low available water capacity, and low fertility
Management measures and considerations:
- Sites on other soils should be considered.

Woodland

Suitability: Moderately suited
Limiting soil features: Erosion hazard, equipment limitation, seedling mortality, and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- The slope is too steep in places for the safe operation of wheeled and tracked equipment.
- Cable yarding or other techniques may be needed to harvest timber.
- The content of gravel causes droughtiness and reduces seedling survival rates.
- Selecting drought-tolerant species, increasing tree planting rates, and planting on moister, north- and east-facing slopes help seedling survival.
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as burning and herbicide application, reduces immediate plant competition.

Dwellings

Suitability: Not suited
Limiting soil features: Slope that is too steep for dwellings
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Slope
Management measures and considerations:
- Untreated effluent can move laterally, seep in downslope areas, and create a health hazard.
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- Building roads in the less sloping areas can reduce cutting and filling.

Interpretive Group

Capability subclass: 7e

SeC—Sengtown gravelly silt loam, 5 to 12 percent slopes

Composition

Sengtown soil and similar soils: 50 to 80 percent

Setting

Landscape position: Convex ridgetops
Major use: Pasture and woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Low in the upper part of the soil and moderate in the lower part
Erosion hazard: Severe
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsurface layer:
2 to 10 inches—yellowish brown gravelly silt loam

Subsoil:
10 to 18 inches—strong brown gravelly silty clay loam that has brownish and reddish mottles

18 to 29 inches—red gravelly silty clay that has yellowish mottles
29 to 60 inches—red gravelly clay that has brownish mottles and some grayish mottles in the lower part

Inclusions

Contrasting inclusions:
- Small areas of Lax soils in saddles and on ridgetops
- Areas of Mountview soils intermingled with the Sengtown soil on ridgetops
- Biffle soils on narrow ridgetops
- Areas of very gravelly soils that have large cobbles of chert on the surface

Similar inclusions:
- Some areas of soils that are similar to the Sengtown soil but that have less clay in the upper part of the solum

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Erosion is a major concern if cultivated crops are grown.
- Conservation practices are essential in maintaining soil productivity.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.

Pasture and hay

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited
Limiting soil features: Slope and shrink-swell potential
Management measures and considerations:
- Reinforcing footings and foundations helps to prevent the structural damage caused by moderate shrinking and swelling.
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Moderate permeability

Management measures and considerations:
- Increasing the size of the absorption field helps to overcome the restricted permeability.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as base material, mixing it with sand and gravel can improve its strength and stability.

Interpretive Group

Capability subclass: 3e

SeD2—Sengtown gravelly silt loam, 12 to 20 percent slopes, eroded

Composition

Sengtown soil and similar soils: 80 to 90 percent

Setting

Landscape position: Moderately steep hillsides
Major use: Woodland and pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Low in the upper part of the soil and moderate in the lower part
Erosion hazard: Very severe
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—brown gravelly silt loam

Subsoil:
6 to 18 inches—strong brown gravelly silty clay loam
18 to 30 inches—yellowish red gravelly silty clay that has yellowish mottles
30 to 60 inches—red gravelly clay that has yellowish, brownish, and grayish mottles

Inclusions

Contrasting inclusions:
- Small areas of Mountview and Lax soils on shoulder slopes
- Areas of Biffle soils on the lower parts of hillsides
- Areas of very gravelly soils that have large cobbles of chert on the surface
- Tarklin and Minvale soils in colluvial areas at the base of slopes

Similar inclusions:
- On some hillsides areas of soils that are similar to the Sengtown soil but that have less clay in the upper part

Use and Management

Cropland

Suitability: Poorly suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Erosion is a very severe hazard if cultivated crops are grown.
- Intensive conservation practices are essential in maintaining soil productivity.
- Cropping systems should include rotations in which the soil remains in grass and legumes for several seasons following cultivation.
- The content of gravel in the surface layer may hinder tillage equipment.

Pasture and hay

Suitability: Moderately suited
Limiting soil features: Slope
Management measures and considerations:
- The slope is too steep in parts of the map unit for the safe operation of hay harvesting or pasture maintenance equipment.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Erosion hazard and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.
- Reinforcing footings and foundations help to prevent the structural damage caused by moderate shrinking and swelling.

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Slope and moderate permeability
Management measures and considerations:
- The slope can increase installation costs by requiring more field lines.
- Increasing the size of the absorption field helps to overcome the restricted permeability.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength and slope

Management measures and considerations:
- If the natural soil is to be used as base material, mixing it with sand and gravel can its improve strength and stability.
- Building roads in the less sloping areas can reduce cutting and filling.

Interpretive Group

Capability subclass: 4e

SeF—Sengtown gravelly silt loam, 20 to 60 percent slopes

Composition

Sengtown soil and similar soils: 80 to 90 percent

Setting

Landscape position: Steep hillsides
Major use: Woodland

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Low in the upper part of the soil and moderate in the lower part
Erosion hazard: Very severe
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsurface layer:
2 to 10 inches—yellowish brown gravelly silt loam

Subsoil:
10 to 18 inches—strong brown gravelly silty clay loam that has brownish and reddish mottles
18 to 29 inches—red gravelly silty clay that has yellowish mottles
29 to 60 inches—red gravelly clay that has brownish mottles and some grayish mottles in the lower part

Inclusions

Contrasting inclusions:
- Areas of Biffle soils on the lower parts of hillsides
- Areas of Tarklin and Minvale soils on small, colluvial slopes at the base of hills
- Small areas of rock outcrop on the lower parts of some hillsides
- Areas of very gravelly soils that have large cobbles of chert on the surface

Similar inclusions:
- On some hillsides areas of soils that have less clay in the upper part
- On some cleared hillsides areas of eroded soils that have a thinner surface layer than that of the Sengtown soil

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Slope
Management measures and considerations:
- Sites on other soils should be considered.

Pasture and hay

Suitability: Poorly suited
Limiting soil features: Slope
Management measures and considerations:
- Forages are difficult to manage because of the slope.
- The slope is too steep for the safe operation of hay harvesting or pasture maintenance equipment.
- Deferred grazing, fertilization, and proper stocking rates can help to keep the soil and forage in good condition.

Woodland

Suitability: Moderately suited
Limiting soil features: Erosion hazard, equipment limitation, seedling survival, and plant competition
Management measures and considerations:
- Roads and skid trails are subject to erosion unless they are provided with adequate plant cover.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- The slope is too steep for the safe operation of wheeled and tracked equipment across it in planting and harvesting operations.
- Cable yarding or other techniques may be needed to harvest timber on steeper areas.
- Seedling survival rates are reduced on warmer, drier, south slopes.
- Planting large, hardy tree seedlings at closer spacings than typical and planting on moister, north- and east-facing slopes can help in establishing stands (fig. 14).
- Undesirable plants reduce adequate natural or artificial reforestation without site preparation and maintenance.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.
- Tree growth is highest on the lower third of north- and east-facing slopes.

Dwellings

Suitability: Not suited
Limiting soil features: Slope
Management measures and considerations:
- The slope is too steep for dwellings; sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Slope
Management measures and considerations:
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Slope and low strength

Figure 14.—An area of Sengtown gravelly silt loam, 20 to 60 percent slopes. Tree growth is highest on the north- and east-facing slopes of this soil.

Management measures and considerations:
- Building roads in the less sloping areas can reduce cutting and filling.
- If the natural soil is to be used as base material, mixing it with sand and gravel can improve its strength and stability.

Interpretive Group

Capability subclass: 7e

SmC2—Sengtown-Mountview complex, 5 to 12 percent slopes, eroded

Composition

Sengtown soil and similar soils: 45 to 80 percent
Mountview soil and similar soils: 20 to 45 percent

Setting

Landscape position: Convex side slopes and ridgetops
Major use: Pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate

Flood hazard: None
Available water capacity: Sengtown—moderate; Mountview—high
Seasonal high water table: More than 6 feet
Soil reaction: Sengtown—very strongly acid to moderately acid; Mountview—very strongly acid or strongly acid
Shrink-swell potential: Low in the upper part of the soil and moderate in the lower part
Erosion hazard: Severe
Depth to bedrock: More than 60 inches

Typical Profile

Sengtown

Surface layer:
0 to 6 inches—brown gravelly silt loam

Subsoil:
6 to 18 inches—strong brown gravelly silty clay loam
18 to 30 inches—yellowish red gravelly silty clay that has yellowish mottles
30 to 60 inches—red gravelly clay that has yellowish, brownish, and grayish mottles

Mountview

Surface layer:
0 to 6 inches—brown silt loam

Subsoil:
6 to 20 inches—strong brown silty clay loam
20 to 24 inches—strong brown silty clay loam that has few reddish mottles and light yellowish brown silt loam pockets
24 to 60 inches—red gravelly silty clay that has yellowish, brownish, and grayish mottles

Inclusions

Contrasting inclusions:
- Small areas of Dickson and Lax soils in saddles
- Areas of Biffle soils on some narrow ridgetops
- Areas of very gravelly soils that have large cobbles of chert on the surface

Similar inclusions:
- Some areas of soils that are similar to the Sengtown soil but that have less clay in the upper part
- Some cleared areas that are severely eroded and have a surface layer of gravelly silty clay loam

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Severe erosion hazard
Management measures and considerations:
- Erosion is a severe hazard if cultivated crops are grown.
- The Sengtown soil is gravelly and slightly droughty; the Mountview soil is silty and erodes easily when cultivated.
- Yields of most crops are higher on the Mountview soil than on the Sengtown soil.

- The content of gravel in the surface layer of the Sengtown soil may hinder tillage equipment.
- Conservation practices are needed in maintaining soil productivity.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.

Pasture and hay

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- Yields of pasture and hay are higher on the Mountview soil than on the Sengtown soil.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Erosion hazard and plant competition
Management measures and considerations:
- Providing an adequate plant cover helps to control erosion on roads and skid trails.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- Intensive site preparation and maintenance prevent undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Moderately suited
Limiting soil features: Moderate shrink-swell potential and slope
Management measures and considerations:
- Reinforcing footings and foundations helps to prevent the structural damage caused by the moderate shrinking and swelling.
- Landshaping is needed for site preparation, or buildings need to be designed to conform to the natural slope.

Septic tank absorption fields

Suitability: Moderately suited
Limiting soil features: Moderate permeability
Management measures and considerations:
- Increasing the size of the absorption field helps to overcome the restricted permeability.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength
Management measures and considerations:
- If the natural soil is to be used as base material, mixing it with sand and gravel can improve its strength and stability.

Interpretive Group

Capability subclass: 3e

SrF—Sengtown-Rock outcrop complex, 20 to 60 percent slopes

Composition

Sengtown and similar soils: 50 to 75 percent
Rock outcrop: 25 to 50 percent

Setting

Landscape position: Steep hillsides with rock outcrops on the lower part of the slope
Major use: Woodland

Properties and Qualities of the Sengtown Soil

Drainage class: Well drained
Permeability: Moderate
Flood hazard: None
Available water capacity: Moderate
Seasonal high water table: More than 6 feet
Soil reaction: Very strongly acid to moderately acid
Shrink-swell potential: Low in the upper part of the soil and moderate in the lower part
Depth to bedrock: More than 60 inches; depth is shallower near rock outcrops

Typical Profile

Sengtown

Surface layer:
0 to 2 inches—brown gravelly silt loam

Subsurface layer:
2 to 10 inches—yellowish brown gravelly silt loam

Subsoil:
10 to 18 inches—strong brown gravelly silty clay loam that has brownish and reddish mottles
18 to 29 inches—red gravelly silty clay that has yellowish mottles
29 to 60 inches—red gravelly clay that has brownish mottles and some grayish mottles in the lower part

Rock outcrop

This part of the map unit is made up of limestone rock outcrop consisting of horizontal shelves or of isolated stones or boulders. The outcrops range from 1 to 15 feet across and as much as 20 feet long. They extend from 1 to 3 feet above the soil surface. The bands of rock commonly have cracks or crevices that are 1 to 10 feet wide and 4 to more than 6 feet deep and contain clayey soil material.

Inclusions

Contrasting inclusions:
- Small areas of Minvale and Tarklin soils on footslopes

Similar inclusions:
- Intermingled with rock outcrops, soils less than 60 inches deep over bedrock

Use and Management

Cropland

Suitability: Not suited

Limiting soil features: Steep slopes, erosion hazard, and hard limestone outcrops
Management measures and considerations:
• Sites on other soils should be considered.

Pasture and hay

Suitability: Not suited
Limiting soil features: Steep slopes, erosion hazard, and hard limestone outcrops
Management measures and considerations:
• Sites on other soils should be considered.

Woodland

Suitability: Moderately suited
Limiting soil features: Erosion hazard, equipment limitation, seedling mortality, and plant competition
Management measures and considerations:
• Most areas are small and difficult to manage for timber if conventional methods of harvesting and planting are used.
• Harvesting trees may increase the hazard of erosion.
• Providing an adequate plant cover helps to control erosion on roads and skid trails.
• Rock outcrops and the slope limit the kind of equipment that can be used in forest management.
• Cable systems or other methods may be needed in harvesting timber.
• Because of the slope and difficulty of access, natural reforestation of harvested areas by hardwood sprouts and seedlings is recommended.

Dwellings

Suitability: Not suited
Limiting soil features: Slope and rock outcrops
Management measures and considerations:
• Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Slope and rock outcrops
Management measures and considerations:
• Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Slope, low strength, and rock outcrops
Management measures and considerations:
• Building roads and streets can require removing bedrock and filling steep slopes.
• If the soil is used as base material, mixing it with sand and gravel can improve its strength and stability.

Interpretive Group

Capability subclass: Sengtown—7e; Rock outcrop—none assigned

Su—Sullivan silt loam, occasionally flooded

Composition

Sullivan and similar soils: 75 to 90 percent

Setting

Landscape position: Flood plain
Major use: Corn, soybeans, summer hay crops, and pasture

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate in the upper part of the soil and moderately rapid in the gravelly substratum
Flood hazard: Occasional for very brief or brief periods from December to March
Available water capacity: High
Seasonal high water table: More than 6 feet
Soil reaction: Moderately acid to neutral
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 9 inches—dark brown silt loam

Subsoil:
9 to 24 inches—dark yellowish brown silt loam

Substratum:
24 to 36 inches—dark yellowish brown loam that has few lenses of light yellowish brown silt loam
36 to 56 inches—dark brown silt loam
56 to 60 inches—dark yellowish brown gravelly sandy loam

Inclusions

Contrasting inclusions:
- Riverby soils in narrow strips along creek channels
- Areas of sandy soils that are intermingled with the Sullivan soil on natural levees

Similar inclusions:
- Small areas of Arrington soils

Use and Management

Cropland

Suitability: Moderately suited
Limiting soil features: Flooding
Management measures and considerations:
- This map unit is poorly suited to small grains because of flooding in winter.
- Crops planted later in spring are less likely to be damaged by flooding.
- Returning crop residue to the soil helps to maintain the soil condition.

Pasture and hay

Suitability: Well suited
Limiting soil features: Flooding
Management measures and considerations:
- Swift floodwater occasionally damages fences and young forage plants.
- Animals should be given access corridors to areas above the flood plain.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and forage in good condition.

Woodland

Suitability: Moderately suited
Limiting soil features: Seedling mortality and plant competition
Management measures and considerations:
- Flooding increases seedling mortality rates.
- Planting young seedlings on raised beds helps to increase seedling survival rates.
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Flooding and low strength
Management measures and considerations:
- Roads should be constructed on raised fill material above the flood plain.
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 2w

ThC2—Tarklin-Humphreys complex, 5 to 12 percent slopes, eroded

Composition

Tarklin and similar soils: 60 to 80 percent
Humphreys and similar soils: 20 to 40 percent

Setting

Landscape position: Footslopes
Major use: Pasture

Soil Properties and Qualities

Drainage class: Tarklin—moderately well drained; Humphreys—well drained
Permeability: Tarklin—moderate in the upper part of the soil and slow in the fragipan; Humphreys—moderately rapid throughout
Flood hazard: None
Available water capacity: Moderate

Seasonal high water table: Tarklin—perched at a depth of 1.5 to 3 feet from December to April; Humphreys—apparent at a depth of 5 to 6 feet from December to March
Soil reaction: Tarklin—extremely acid to strongly acid; Humphreys—very strongly acid to moderately acid
Shrink-swell potential: Low
Erosion hazard: Severe
Depth to bedrock: More than 60 inches

Typical Profile

Tarklin

Surface layer:
0 to 6 inches—dark yellowish brown gravelly silt loam

Subsoil:
6 to 10 inches—strong brown silt loam that has some gravel
10 to 22 inches—strong brown silty clay loam that has few pebbles
22 to 35 inches—strong brown gravelly silty clay loam
35 to 60 inches—mottled yellowish brown, pale brown, and light brownish gray gravelly silt loam fragipan

Humphreys

Surface layer:
0 to 5 inches—dark yellowish brown gravelly silt loam

Subsoil:
5 to 58 inches—dark yellowish brown gravelly silt loam
58 to 60 inches—strong brown very gravelly sandy loam

Inclusions

Contrasting inclusions:
- A few small areas of somewhat poorly drained soils in concave positions

Similar inclusions:
- Some small areas of severely eroded Tarklin and Humphreys soils
- Some small areas of soils that have a surface layer of silt loam
- Areas of Minvale soils intermingled with the Tarklin and Humphreys soils on footslopes
- Some small areas of soils that have steeper slopes

Use and Management

Cropland

Suitability: Poorly suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Erosion is a severe hazard if cultivated crops are grown.
- Conservation practices are needed to control erosion and maintain soil productivity.
- Excessive rates of erosion can result in dense subsoil material being exposed at or near the surface.
- Minimum tillage, stripcropping, contour farming, and winter cover crops help to minimize runoff and control erosion.
- The content of gravel in the surface layer may hinder tillage equipment.

Pasture and hay

Suitability: Tarklin—moderately suited to pasture and hay but poorly suited to alfalfa; Humphreys—moderately suited

Limiting soil features: Restricted rooting depth in areas of the Tarklin soil
Management measures and considerations:
- Overgrazing reduces plant cover, causes further erosion, and encourages the growth of undesirable species.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and the forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Tarklin—poorly suited; Humphreys—moderately suited to dwellings without basements and poorly suited to dwellings with basements
Limiting soil features: Slope and wetness
Management measures and considerations:
- In some areas, landshaping is needed in site preparation or buildings need to be designed to conform to the natural slope.
- Subsurface tile drains and landshaping help to remove excess water.

Septic tank absorption fields

Suitability: Tarklin—poorly suited; Humphreys—moderately suited
Limiting soil features: Perched water table and restricted permeability in areas of the Tarklin soil
Management measures and considerations:
- Areas of the more permeable Humphreys soil should be located and, if possible, used.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Slope and wetness
Management measures and considerations:
- Building roads in the less sloping parts can reduce cutting and filling.
- In areas of the Tarklin soil, road design should be adapted for a perched water table during wet periods and a dense fragipan in the subsoil.

Interpretive Group

Capability subclass: 3e

TrA—Trace silt loam, 0 to 2 percent slopes, occasionally flooded

Composition

Trace and similar soils: 90 to 100 percent

Setting

Landscape position: Low stream terraces
Major use: Cropland (corn, soybeans, and small grain)

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate in the solum and rapid in the substratum
Flood hazard: Occasional for very brief or brief periods from November to April
Available water capacity: High
Seasonal high water table: More than 6 feet
Soil reaction: Strongly acid or moderately acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 36 inches—brown silt loam
36 to 41 inches—brown gravelly silt loam

Substratum:
41 to 60 inches—dark yellowish brown extremely gravelly sandy loam

Inclusions

Contrasting inclusions:
- Narrow strips of Riverby and Sullivan soils near stream channels
- Humphreys soils intermingled with Trace soils in small areas

Similar inclusions:
- Armour soils in small areas in positions similar to those of the Trace soil

Use and Management

Cropland

Suitability: Well suited
Limiting soil features: Flooding
Management measures and considerations:
- Flooding may occasionally damage cultivated crops.
- Returning crop residue to the soil helps to maintain the soil condition.
- Planting crops later in spring can reduce the hazard of damage by flooding.

Pasture and hay

Suitability: Well suited
Limiting soil features: Flooding
Management measures and considerations:
- Swift floodwater occasionally damages fences and young forage plants.
- Animals should be given access corridors to areas above the flood plain.
- Deferred grazing, fertilization, and proper stocking rates help to keep the soil and forage in good condition.

Woodland

Suitability: Well suited
Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Flooding
Management measures and considerations:
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Flooding and low strength
Management measures and considerations:
- Roads should be constructed on raised fill material above the flood plain.
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 2w

TrB—Trace silt loam, 2 to 5 percent slopes, rarely flooded

Composition

Trace and similar soils: 75 to 90 percent

Setting

Landscape position: Stream terraces
Major use: Cropland and hay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate in the solum and rapid in the substratum
Flood hazard: Rare for brief or very brief periods from December to April
Available water capacity: High
Seasonal high water table: More than 6 feet
Soil reaction: Strongly acid or moderately acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 36 inches—brown silt loam
36 to 41 inches—brown gravelly silt loam

Substratum:
41 to 60 inches—dark yellowish brown extremely gravelly sandy loam

Inclusions

Contrasting inclusions:
- Small areas of Humphreys soils in positions similar to those of the Trace soil
- Narrow strips of Riverby, Sullivan, and Lobelville soils adjacent to stream channels
- Small areas of Tarklin soils in higher areas on stream terraces
- Small areas of Paden soils in lower positions on stream terraces

Similar inclusions:
- Small areas of Armour soils in positions similar to those of the Trace soil

Use and Management

Cropland

Suitability: Well suited
Limiting soil features: Erosion hazard
Management measures and considerations:
- Erosion is a hazard if cultivated crops are grown.
- Conservation practices, such as no-till planting, contour cultivation, and stripcropping, are needed to control erosion and maintain productivity.
- Returning crop residue to the soil helps to improve the soil condition.

Pasture and hay

Suitability: Well suited
Limiting soil features: None
Management measures and considerations:
- Rotating grazing, controlling weeds, and annually applying fertilizer maintain the quality and quantity of forage.

Woodland

Suitability: Well suited
Limiting soil features: Plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Poorly suited
Limiting soil features: Flooding
Management measures and considerations:
- On flood plains most areas of this soil are subject to flooding; sites on other soils should be considered.

Septic tank absorption fields

Suitability: Poorly suited
Limiting soil features: Poor filter and flooding
Management measures and considerations:
- The extremely gravelly layers in the substratum may not adequately filter effluent and may cause the contamination of ground water.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength

Management measures and considerations:
- Roads can be constructed above the flood zone on raised fill material.
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 2e

Ua—Udarents, abandoned

Composition

Udarents and similar soils: 95 to 100 percent

Setting

Landscape position: Unreclaimed phosphate mines, iron ore pits, and gravel pits
Major use: Idle land

Soil Properties and Qualities

Drainage class: Well drained to somewhat excessively drained
Permeability: Moderate or moderately slow
Flood hazard: None
Available water capacity: Low
Seasonal high water table: More than 60 inches
Soil reaction: Extremely acid or very strongly acid
Shrink-swell potential: Moderate
Depth to bedrock: 2 to more than 5 feet

Typical Profile

Surface layer:
0 to 5 inches—dark yellowish brown clay

Subsurface layer:
5 to 60 inches—dark yellowish brown clay that has yellowish and brownish mottles

Inclusions

Contrasting inclusions:
- Small areas of undisturbed soils along the edges of the map unit

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Extreme acidity, droughtiness, restricted rooting depth, and slopes that are too steep or irregular for farming equipment
Management measures and considerations:
- Reclamation can require extensive landshaping with heavy equipment.

Pasture and hay

Suitability: Not suited
Limiting soil features: Extreme acidity, droughtiness, restricted rooting depth, and slopes that are too steep or irregular for farming equipment
Management measures and considerations:
- Reclamation can require extensive landshaping with heavy equipment.

Woodland

Suitability: Poorly suited
Limiting soil features: Erosion hazard, equipment limitation, seedling survival, and plant competition
Management measures and considerations:
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Roadcuts and fill areas need to be seeded to permanent plant cover.
- Irregular slopes limit the kind of equipment that can be used in forest management.
- Cable systems or other methods may be needed in harvesting timber.
- The clayey texture in the surface layer reduces seedling survival rates.
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings and septic tanks

Suitability: Not suited
Limiting soil features: Slope and slow permeability
Management measures and considerations:
- Sites on other soils should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Low strength
Management measures and considerations:
- Soil strength is variable; a suitable base material may be needed.

Interpretive Group

Capability subclass: None; onsite investigation is required

Ud—Udarents, clayey

Composition

Udarents and similar soils: 95 to 100 percent

Setting

Landscape position: Reclaimed mined land, mainly from phosphate or iron mining, and fill material
Major use: Pasture (fig. 15)

Soil Properties and Qualities

Drainage class: Well drained or somewhat excessively drained
Permeability: Moderate or moderately slow
Flood hazard: None
Available water capacity: Low
Seasonal high water table: More than 60 inches
Soil reaction: Extremely acid or very strongly acid
Shrink-swell potential: Moderate
Depth to bedrock: 2 to more than 5 feet

Figure 15.—An area of Udarents, clayey. This area is a reclaimed phosphate mine used as pasture and hay.

Typical Profile

Surface layer:
0 to 12 inches—dark yellowish brown gravelly silty clay loam

Subsurface layer:
12 to 24 inches—dark yellowish brown very gravelly silty clay loam that has pockets of clay in shades of red and brown
24 to 60 inches—yellowish red very gravelly silty clay that has pockets and streaks in shades of brown

Inclusions

Contrasting inclusions:
- Small areas of undisturbed soils along the edges of the map unit

Similar inclusions:
- Some areas of soils that are shallow to bedrock

Use and Management

Cropland

Suitability: Not suited
Limiting soil features: Extremely acid reaction, droughtiness, restricted rooting depth, and, in most areas, gravelly and clayey surface textures that make cultivation difficult or impractical
Management measures and considerations:
- Sites on other soils should be considered.

Pasture and hay

Suitability: Poorly suited
Limiting soil features: Extremely acid reaction and droughtiness
Management measures and considerations:
- Lime and fertilizer can improve forage stands.
- The response to lime and fertilizer is low except during moist periods.
- Selecting drought-tolerant species of legumes and grasses is recommended.

Woodland

Suitability: Moderately suited
Limiting soil features: Seedling mortality and plant competition
Management measures and considerations:
- Droughtiness reduces seedling survival rates.
- Selecting drought-tolerant tree species and planting seedlings at closer spacings than typical can help in establishing stands.
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates mechanical planting.

Dwellings

Suitability: Variable
Limiting soil features: Variable
Management measures and considerations:
- Onsite investigation is needed to determine construction measures.

Septic tank absorption fields

Suitability: Variable
Limiting soil features: Variable
Management measures and considerations:
- Onsite investigation is needed to determine site suitability.

Local roads and streets

Suitability: Moderately suited
Limiting soil features: Low strength
Management measures and considerations:
- Soil strength is variable.
- Suitable base material is likely to be needed.

Interpretive Group

Capability subclass: None; onsite investigation is required

W—Water

This map unit consists of areas inundated with water all or most of the year and generally includes rivers, creeks, and ponds.

No capability classification is assigned to this map unit.

Wm—Woodmont silt loam, rarely flooded

Composition

Woodmont and similar soils: 80 to 90 percent

Setting

Landscape position: Nearly level stream terraces; slopes of 0 to 3 percent
Major use: Pasture

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part of the soil and slow in the fragipan
Flood hazard: Rare for brief duration from December to May
Available water capacity: Moderate or high
Seasonal high water table: Perched at a depth of 1 to 2 feet from December to March
Soil reaction: Strongly acid to slightly acid
Shrink-swell potential: Low
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 9 inches—dark grayish brown silt loam that has brownish mottles

Subsoil:
9 to 22 inches—light yellowish brown silt loam that has grayish and brownish mottles
22 to 27 inches—light brownish gray silt loam and yellowish brown compact silt loam fragipan that has brownish mottles
27 to 60 inches—light gray silt loam fragipan that has mottles in shades of brown

Inclusions

Contrasting inclusions:
- Areas of poorly drained Norene soils in positions slightly lower than those of the Woodmont soil
- Small areas of moderately well drained Paden soils in positions higher than those of the Woodmont soil

Similar inclusions:
- Some small areas of somewhat poorly drained soils that do not have a fragipan in the subsoil

Use and Management

Cropland

Suitability: Poorly suited
Limiting soil features: Wetness
Management measures and considerations:
- In most years the seasonal high water table can delay planting and harvesting operations.
- Subsurface tile drains and surface ditches help to remove excess water.

Pasture and hay

Suitability: Moderately suited to forages; not suited to alfalfa
Limiting soil features: Wetness and restricted rooting depth
Management measures and considerations:
- Grazing when the soil is wet causes surface compaction, reduces plant cover, and encourages the growth of undesirable species.
- Surface ditches and tile drains help to remove excess water and to maintain the quality and quantity of forages.
- Water-tolerant forages, such as tall fescue and white clover, are recommended.

Woodland

Suitability: Moderately suited
Limiting soil features: Equipment limitation, seedling mortality, windthrow hazard, and plant competition
Management measures and considerations:
- The seasonal high water table restricts equipment use to periods when the soil is dry.
- Logging roads require suitable surfacing for year-round use.
- Wetness increases seedling mortality rates.
- Bedding rows helps to increase seedling survival rates.
- Moderate depth to the fragipan restricts root growth.
- Some trees may be uprooted during windy and wet periods.
- Planting trees that have a shallow root system and minimizing thinning help to prevent uprooting.
- Intensive site preparation and maintenance prevents undesirable plants from reducing adequate natural or artificial reforestation.
- Site preparation, such as chopping, burning, and herbicide application, reduces debris and immediate plant competition and facilitates planting.

Dwellings

Suitability: Not suited
Limiting soil features: Flooding and wetness
Management measures and considerations:
- Sites on other soils should be considered.

Septic tank absorption fields

Suitability: Not suited
Limiting soil features: Wetness, flooding, and slow permeability
Management measures and considerations:
- Other sites for septic tank absorption fields should be considered.

Local roads and streets

Suitability: Poorly suited
Limiting soil features: Low strength
Management measures and considerations:
- If the soil is to be used as a base for roads and streets, mixing it with sand and gravel can increase its strength and stability.

Interpretive Group

Capability subclass: 3w

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops, pasture, and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

John Kazda, agronomist, Natural Resources Conservation Service, helped prepare this section.

This section suggests general management needed for crops and pasture in Hickman County. It lists the estimated yields of the main crops and pasture plants for each soil, explains the system of land capability classification used by the Natural Resources Conservation Service, and describes prime farmland.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

The Tennessee Agricultural Statistics Report for 1994 reported the following acreages for Hickman County. About 2,000 acres was in soybeans; 200 acres was in tobacco; 350 acres was in wheat; 3,500 acres was in corn; and small acreages were in other crops, including grain sorghum, snap beans, watermelons, and sweet corn.

Generally, erosion is not a serious problem in Hickman County, which has a relatively small total acreage of cropland. However, erosion is a significant problem in some parts of the county. Silty soils on stream terraces along the Duck River are most susceptible to erosion, especially where cropped intensively. They comprise mostly

Pickwick and Armour soils. They are easily eroded because the surface layer consists mainly of high amounts of silt and low amounts of clay. Other soils throughout the county that have a silty surface layer are very susceptible to erosion. They include Mountview, Dickson, and Lax soils. All undulating or steeper soils that have an unprotected surface in Hickman County are subject to erosion.

Erosion of the original surface layer is detrimental for several reasons: productivity is decreased, plant nutrients are lost, and sediment blocks stream channels and drainage ditches.

Productivity is decreased as the surface layer is lost and part of the subsoil becomes incorporated into the plow layer. On eroded soils tilling or preparing a good seedbed is more difficult. Also, lack of moisture more easily damages crops during dry periods on eroded soils than on uneroded soils.

Some soils have a fragipan, or a layer in the subsoil that limits the depth of the root zone. As erosion occurs on these soils, undesirable layers for root growth become closer to the surface. In Hickman County, Lax and Dickson soils, for example, have a fragipan.

Soil tilth, or workability, is an important factor in the germination of seeds and in the infiltration of water into the soil. Soils with good tilth are granular, porous, and easily worked. On most soils in the county the surface layer is silt loam or cherty silt loam that is low or moderate in organic matter content. Generally, the structure of the plow layer is weak or moderate. Intense rainfall causes the surface to crust. The crust is hard when dry and somewhat impervious to water; it reduces infiltration and increases runoff. Regular additions of crop residue, manure, and other organic material improve soil structure and reduce crusting. Soils that have a cherty surface layer tend to hamper tillage and interfere with seedbed preparation.

Plants nutrients that are lost as a result of erosion must be replaced by costly applications of fertilizer. Many soils in Hickman County are naturally acid and low or medium in plant nutrients. Commercial fertilizers and lime are needed for most crops to produce economically feasible yields. Soils in the Duck River Valley include Armour, Arrington, Egam, and Lindside soils. These soils are naturally high in phosphate and require no or little phosphate fertilizer.

In Hickman County the use of fertilizers and lime should be based on the results of soil tests and on the nutrient requirements of the crop to be grown. Soil type, desired yield level, and cropping practices for the most recent 3 to 5 years should also be considered. Information about soil tests and fertilizer recommendations can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Agricultural Extension Service.

Sediment fills stream channels as a result of erosion on uplands. Erosion-control practices can minimize sedimentation of streams and pollution by herbicides attached to soil particles. Such practices also reduce deposition on productive bottom land of unfertile sediment eroded from uplands.

Erosion-control practices provide a protective surface cover, minimize runoff, and increase water infiltration. Using conservation tillage or incorporating high-residue crops into the cropping system maintains a plant cover for extended periods. These practices also keep erosion to levels that do not reduce soil productivity.

Maintaining crop residue on the surface helps to increase infiltration, to minimize runoff, and to control erosion. This practice can be adapted to crop fields, except those that are steep or badly eroded. No-till or minimum tillage systems can control erosion on sloping soils in row crops with grassed waterways.

Such erosion-control practices as contour farming and stripcropping are recommended for use in Hickman County. Contour farming is best adapted to soils that have smooth, uniform slopes, such as most areas of Armour, Pickwick, and Mountview soils.

Information on the design of erosion-control practices for the soils in Hickman

County is available from the local office of the Natural Resources Conservation Service.

Pasture comprises about 59,000 acres in Hickman County. Hay covers about 29,000 acres. Pasture and hay consist mostly of cool-season grasses and legumes. The common grasses are tall fescue and orchardgrass. The common legumes are white clover, red clover, alfalfa, annual lespedeza, and sericea lespedeza. Legumes are included with the seed mixture in establishing pasture. They are reintroduced in perennial grass stands when they comprise less than about 30 percent of pasture. Livestock farms require both pasture and hay. For them, legume and grass forage crops in the cropping system can control erosion on sloping land, provide nitrogen, and maintain tilth.

On pasture, the major management practices needed are fertilizing, liming, weed control, rotation grazing, and occasional renovation. Fertilizer should be applied according to plant needs as indicated by plant growth, the level of production desired, and the results of soil testing. Weeds can be controlled on pasture by using herbicides and by mowing before weeds reach maturity and seed production. Weed control is easier on well managed pastures than on overgrazed, poorly managed pastures. Soil compaction from grazing animals is a major concern on soils that have a high water table. On compacted soils problems include reduced infiltration, enhanced ponding or increased runoff, restricted rooting, and subsequent degradation of the forage stand. Rotation or deferred grazing is especially important on wet soils.

Some annual grasses are used for supplemental grazing or for hay. Sudan-sorghum crosses, pearl millet, and sudangrass make good summer pasture. Small grains and annual ryegrass provide good grazing in late fall and early spring.

Most harvested hay is surplus growth of grass-legume pastures. Annual lespedeza, sericea lespedeza, alfalfa, soybeans, millet, and small grains are also used for hay crops. Management for hay is generally the same as for pasture, except that more fertilizer is needed. Hay crops should be cut at the stage of growth that provides the best quality feed and does not damage the grass-legume stand. Cutting perennial hay crops too close causes premature loss of the stand.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of a yield indicates the crop is not suited or not commonly grown on that map unit. The land capability classification of each map unit also is shown in the table. Absence of a yield indicates that the crop is not suited to or is not commonly grown on that soil mapping unit.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops *(12)*. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by numerals 1 through 8. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use. Class 1 soils have not been identified in Hickman County.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation.

Class 7 soils have very severe limitations that make them unsuitable for cultivation.

Class 8 soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w,* or *s,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w* because the soils in class 5 are subject to little or no erosion and have wetness limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The capability classification of the map units in this survey area is given in the section “Detailed Soil Map Units” and in table 5.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of

government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 41,695 acres in the survey area, or nearly 10.6 percent of the total acreage, meets the soil requirements for prime farmland. Areas of this land are scattered throughout the county, but are mainly in general soil map units 1, 2, 3, and 4, which are described under the heading "General Soil Map Units." About 10,000 acres of prime farmland is used for such row crops as corn, soybeans, wheat, burley tobacco, and grain sorghum. The majority of this acreage is in pasture and hay. The dominant forages grown in Hickman County are grass and legume mixtures, such as tall fescue and ladino clover.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands. These marginal lands generally are more erodible, less productive, droughty, and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 6. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Woodland Management and Productivity

Joseph H. Paugh, forester, Natural Resources Conservation Service, helped prepare this section.

About 297,000 acres, or 76 percent, of the total area of Hickman County is woodland. Nearly all this woodland is in private ownership. Of the privately owned woodland, about 73,000 acres is controlled by industry.

The oak-hickory type makes up about 291,600 acres. It is the most common forest type and is generally on uplands. The loblolly-shortleaf pine type makes up 5,600 acres. It grows throughout the county. It is commonly planted in eroded areas or on large industrial tracts *(10)*.

Hickman County is in an area of Tennessee where average woodland growth is 40 cubic feet per acre per year. Potential average growth for this area is 65 cubic feet per acre per year. The bottom land of Hickman County is capable of producing in excess of 150 cubic feet per acre per year. On uplands the greatest growth potential is normally on the lower third of the north- and east-facing slopes, where growth may

reach 120 cubic feet per acre per year. Other values of woodland include wildlife habitat, recreation, natural beauty, and watershed protection.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. In the table, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual

development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a number for *volume of wood fiber*. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic feet per acre per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Suggested trees to plant are those that are suitable for commercial wood production.

Recreation

Joseph H. Paugh, forester, Natural Resources Conservation Service, helped prepare this section.

Hickman County has the possibility for a wide variety of recreational activities. Those with high potential include vacation cabins, warmwater fishing, big and small game hunting, campgrounds, and natural and scenic areas. Activities with medium potential include historic areas, vacation farms, shooting preserves, waterfowl hunting, sports areas, coldwater fishing, and picnic and field sports areas.

The soils in Hickman County generally have good properties for recreational activities. Attention should be given to soil depth, permeability, texture, slope, rock outcrops, and drainage in developing recreation enterprises. Most soil problems can be overcome with careful site selection and planning.

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in the table can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall

readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the period of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

By Michael E. Zeman, State biologist, Natural Resources Conservation Service, helped prepare this section.

Wildlife, an important natural resource, provides a source of revenue from sport hunting in Hickman County. The good diversity of wildlife in the county provides recreational opportunities for photography and birdwatching and improves the overall quality of life. Popular game species include bobwhite quail, cottontail, whitetailed deer, mourning dove, eastern wild turkey, gray squirrel, and fox squirrel.

Whitetailed deer is the most popular game animal in the county. The herd has grown from almost none in the 1940's to about 1 deer per 20 to 30 acres across the county in the mid-1980's and even more deer in several local areas. This restoration has occurred largely through the efforts of the Tennessee Wildlife Resources Agency and through effective game management. Hickman County was first in Tennessee in the deer harvest for several years in the 1980's. It has had harvests of about 3,000 deer annually.

The wild turkey population in the county had declined to zero in the early 1950's. Restoration efforts and the quality habitat throughout the county have resulted in one of the best wild turkey populations in Tennessee. In the mid-1980's about 20 wild turkeys per year were harvested. Since then, both populations and harvests of wild turkey have increased.

The bobwhite quail population is good in agricultural areas. Most quail live in the southeast part of the county and along lower Beaverdam Creek and the lower reaches of the Duck River. In these areas habitat diversity is good where brushy fence rows, odd areas, and idle fields are adjacent to edges of cropland and woodland. The population is down from several years ago because cropland has been converted to grassland, but the population has remained stable.

The cottontail population is good throughout the county. The highest numbers are in the Nashville Basin Major Land Resource Area in the southeast part of the county. In this area agricultural land combined with abundant, low brushy cover provides optimum habitat. The population is relatively high along the Piney River in the north-central part of the county. It is stable but down from several years ago, when small

family farms produced more crops for home use. The swamp rabbit prefers lowland swamps and wooded flood plains subject to stream overflow. Isolated populations of swamp rabbit inhabit the wetter bottoms of Beaverdam Creek, Cane Creek, and the Duck River mainly the southwestern and western parts of the county. The State of Tennessee has listed swamp rabbit as a species of concern because drainage and land clearing has diminished its habitat.

The mourning dove is the most popular migratory game species in Tennessee. Relatively good numbers migrate annually through the county. The highest numbers frequent bottom land in grain crops. The mourning dove population has gone down slightly over the past 20 years, but remains stable.

Southern flying squirrel, gray squirrel, and fox squirrel inhabit the county. Southern flying squirrel is common but nocturnal. Good or excellent numbers of gray squirrel and good numbers of fox squirrel live throughout the county in the extensive hardwood forests. The highest numbers are along woodland edges, in smaller woodlots, and near woody fence rows near agricultural fields.

Waterfowl numbers are low in the county, which lies outside the Mississippi Flyway. The most prominent species of duck that overwinters in the county is the wood duck. It utilizes the Duck River, the Piney River, and scattered farm ponds throughout the county. Some wood ducks nest in spring, but the number is low because nesting cavities are lacking. Flocks of Canada geese stop on the Tennessee River, just west of the county, and occasionally stop on agricultural fields along the Duck River in the western part of the county.

The Tennessee Wildlife Resources Agency lists several species of valuable furbearers in the State. Most of these species inhabit the county. Wetland furbearers include mink, muskrat, and beaver. Their numbers are relatively low in the county because wetlands are relatively few. However, localized populations inhabit rivers, streams, ponds, and wetlands in the county. Wetland furbearer populations are stable in the county because drainage and conversion of wetlands to other land uses are scarce and new pond construction has declined. Upland furbearers are common and abundant throughout the county. They include eastern bobcat, raccoon, opossum, red fox, gray fox, striped skunk, and spotted skunk. The coyote once did not inhabit the county; in the 1970's, however, it expanded its range into the county from the west. Now it is common and abundant throughout the county, and its population continues to grow.

Many nongame species are abundant throughout the county. Various species of birds are associated with different plant communities. Common songbirds include eastern bluebird and purple martin, which frequently nest near farmsteads. Woodland birds include Carolina chickadee, tufted titmouse, and various woodpeckers. Openland birds include robin, meadowlark, and various sparrows. Small numbers of cardinal, indigo bunting, and yellow-breasted chat inhabit early successional weed and shrub plant communities. Common birds of prey include red-tailed hawk, sparrow hawk, barred owl, and screech owl. Reptiles, amphibians, and mammals are also common. Common reptiles and amphibians include snapping turtle, red-ear turtle, eastern box turtle, five-lined skink, eastern hognose snake, copperhead snake, bullfrogs, and zigzag salamander. Common mammals include Hispid cotton rat, voles, moles, and other small rodents. The relative abundance of nongame species depends on the type and quality of habitat of individual species. Generally, management for game species improves the quality of habitat for most nongame species.

State and Federal lists of threatened or endangered wildlife species that may inhabit Hickman County include gray bat, Indiana bat, pale lilliput pearly mussel, birdwing pearly mussel, Eastern cougar, and river otter. Species that may migrate through the county include bald eagle, peregrine falcon, osprey, sharp-shinned hawk, Cooper's hawk, and grasshopper sparrow.

Most soils of the county have moderate limitations as sites for ponds because of

seepage or excessive slopes. Nevertheless, the high clay content in most soils accounts for the nearly 1,500 ponds and small lakes that have been built for watering livestock and for recreational fishing. Species stocked for recreational fishing include largemouth bass, bluegill sunfish, redear sunfish, channel catfish, and fathead minnow. Occasionally, white and black crappie are stocked in the larger lakes. Water quality in ponds is typically acidic and reduces fish production. Most ponds are not managed and produce 50 to 100 pounds per acre of fish annually. Bass ponds that are limed, fertilized, and managed can produce as much as 300 pounds of bass per acre per year.

Warmwater streams in Hickman County total 404 miles. They provide about 2,865 acres of aquatic habitat. The Duck River, the largest river, averages 100 feet in width. It extends 70 miles east to west through the central part of the county. Fish species common in streams include largemouth bass, smallmouth bass, spotted bass, rock bass, bluegill sunfish, longear sunfish, green sunfish, channel catfish, flathead catfish, brown bullheads, yellow bullheads, and several species of redhorse suckers and minnows. Streams are moderately productive for fish, and populations of warmwater fish are good throughout. The 305(b) report of the Tennessee Department of Health and Environment on the status of water quality in Tennessee has not restricted aquatic use in Hickman County.

Some warmwater aquaculture exists in the county. The county has a moderately long growing season and an annual average of more than 50 inches of rainfall. Norene, Woodmont, Dickson, Guthrie, and Melvin soils are suited to ponds. However, the steep terrain of the county limits suitable sites and precludes extensive warmwater culture.

Depth to bedrock restricts access to an adequate volume of groundwater for aquaculture. The shallow Highland Rim Aquifer system and the deeper Central Basin Aquifer system yield several coldwater springs, which supply some coldwater aquaculture facilities. The water quality of these aquifers is generally good, and the dissolved solids content is less than 500 parts per million. Rainbow trout is the most common, commercially produced coldwater species in the county. Pond culture and fee fishing are the most common enterprises.

Very few wetlands exist in Hickman County if such artificial wetlands as upland ponds are excluded. Wetlands are mainly wooded on Melvin, Norene, and Guthrie soils. These soils are subject to flooding or ponding and have a high water table. Wetlands are most commonly found along the major tributaries of the Duck River and along Cane Creek, in the southern tip of the county. Bottom-land hardwoods provide some of the most productive wildlife habitat in the county. Many upland and wetland wildlife species depend on wooded wetlands for their daily needs. Bottom-land soils are highly productive and generally produce the best mast and forage.

Bottom-land hardwoods also improve the water quality of streams. They remove nutrients and trap sediment from upland runoff. They shade water and thus lower water temperature. They also provide leaf litter for food for aquatic insects.

Habitat management provides adequate amounts of food for wildlife, needed cover types, and water within the home range of wildlife. Take any one of these needs, create an unfavorable balance among them, or create an inadequate distribution of them and animal populations can become severely limited or eliminated. For example, whitetailed deer eats weeds, fruits, acorns, leaves, twigs, and seeds. In Hickman County, the typical woodland habitat type provides some of these foods on a seasonal basis but does not provide year-round, quality food.

Creating openings on soils where timber production potential is low increases “edge” and provides winter weeds that are otherwise normally lacking. Planting linear food plots on suitable soils further supplements the seasonal food supply. Woodland habitat provides adequate cover for deer, but possibly not nesting and shrubby winter

and escape cover for turkey and quail. The desired cover plants may need to be established.

Conservation practices can provide or improve quality wildlife habitat. On cropland, planned crop rotations and crop residue use can provide food and needed winter cover for many species of songbirds, quail, dove, turkey, rabbit, and deer. Deferred livestock grazing and fencing can protect food plots, browse plants for deer, nesting cover for quail and turkey, and even fish habitat. Field borders and filter strips along streams bordering cropland or pasture can protect the water quality of streams. They can also provide food, cover, and travel lanes for quail, deer, squirrel, turkey, rabbit, songbirds, and many other nongame species. Shrub or tall grass field borders on improved pasture benefit quail, deer, turkey, rabbit, and many nongame species. Protecting den and quality mast-producing trees during selective thinning of woodland improves wildlife habitat.

Wildlife habitat can be improved by upland wildlife habitat management, wetland wildlife habitat management, and fishpond management. It can also be improved by the use of grasses and legumes in rotation, nutrient management, pasture and hayland planting, pasture and hayland management, building ponds, strip disking, planting trees, excluding livestock, and improving woodland.

Some practices are harmful to wildlife. Generally, they include indiscriminate burning and use of chemicals for killing weeds and insects, heavy grazing, complete clean mowing early in the growing season, and clean fall plowing. They also include extensive clearcutting timber, draining wetlands, and removing den- and mast-producing trees.

Technical assistance in the planning or application of these conservation and wildlife management practices can be obtained from the Natural Resources Conservation Service, the University of Tennessee Agricultural Extension Service, the Tennessee Wildlife Resources Agency, and the Tennessee Division of Forestry.

Plant diversity affects overall biodiversity of an area by determining the diversity of wildlife populations. In any given area of the county it is determined by such environmental factors as soils, rainfall distribution, land use, and management. In general, the more diverse the soil types and plant communities, the higher the biodiversity of the area.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of

habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, orchardgrass, clover, and annual lespedeza.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are common ragweed, goldenrod, beggarweed, partridge pea, and broomsedge.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, black locust, cherry, sweetgum, apple, hawthorn, dogwood, hickory, hackberry, and blackberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are shrub lespedeza, shrub honeysuckle, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and eastern redcedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, cattail, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are waterfowl feeding areas and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most

limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the “Soil Properties” section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet

for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, and shrinking and swelling can cause the movement of footings. A high water table, depth to bedrock, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 11 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high

water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock, flooding, and large stones.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. Slope and bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, and soil reaction affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is

affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, and bedrock.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel or stones, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent

water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. A low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect

roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained.

Rock fragments greater than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical Properties of the Soils

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading “Soil Series and Their Morphology.”

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affects the physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Texture, kind of clay, content of organic matter, and soil structure influence moist bulk density.

Saturated hydraulic conductivity refers to the ability of a soil to transmit water or air. The term “permeability,” as used in soil surveys, indicates saturated hydraulic

conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, a change of 3 to 6 percent; and *high*, a change of 6 to 9 percent. *Very high*, a change of more than 9 percent, is sometimes used.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kf is an adjunct to erosion factor K. Factor Kf accounts for larger, less movable rock fragments. It allows for the effect of armoring or mulching of rock fragments on the surface and in the surface layer. For soils that do not have rock fragments, K and Kf are the same. Kf increases with an increase in the proportion that rock fragments occupy in the soil. An increased Kf indicates a lesser hazard of erosion.

Erosion factor T is an estimate of the maximum average annual rate of wind or water erosion that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Chemical Properties of the Soils

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Cation-exchange capacity and *effective cation-exchange capacity* are measures of the soils's ability to retain cations. Such cations as calcium and potassium are plant nutrients. Soils that have a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizers and amendments than soils having a higher cation-exchange capacity.

Cation-exchange capacity is the amount of cations the soil can adsorb at pH 7.0. This measurement is reported for soils having a pH greater than 5.5. Effective cation-exchange capacity is the sum of the extractable bases plus aluminum reported for soils having a pH of less than 5.5. This measurement accounts for variable charge components in highly weathered soils.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Soil Features

Table 17 lists soil features that can influence how the soil is suited to or how it will behave under certain uses. These features are given for the whole soil or for certain layers. These features are based on field observations and on test data for these and similar soils.

Restrictions are layers in the soil observed in the field. These layers restrict root growth and reduce the movement of air and water through the soil.

Depth is the measurement in inches from the soil surface to the upper and lower boundaries of the restrictive layer. The depth to these layers is based on many borings in the field during mapping. Restrictive layers whose upper boundaries are below 60 inches are not recognized.

Kind is the type of restriction, such as bedrock in a moderately deep soil or a dense, impervious fragipan in a soil. Restrictive layers are observed and recorded for the extent of each soil during mapping. Bedrock is a restrictive layer divided into lithic or paralithic. Lithic layers are hard bedrock. Blasting or special equipment generally is needed to excavate lithic layers. Paralithic layers are weathered bedrock. Trenching machines, backhoes, or small rippers can excavate paralithic layers. Fragipans are layers that perch water and restrict root growth. They can be excavated with trenching machines, backhoes, or small rippers.

Thickness is the distance in inches from top to bottom of the restrictive layer. It is measured and recorded for each soil during mapping. It is not reported when the restrictive material is bedrock.

Hardness is the rupture resistance of an air-dried, then submerged block-like specimen of mineral material. The measurement is related to the force needed to crush the sample. Force ranges from very weakly cemented (crushable with moderate force applied between the thumb and forefinger) to indurated (cannot be crushed with a moderate blow with a hammer). The hardness and thickness of a restriction influence the ease of mechanical excavation of the soil.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength upon thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the surface and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk or corrosion, expressed as *low, moderate,* or *high* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Flooding Frequency and Duration

Table 18 gives information on flooding frequency and duration and the months in which flooding can be expected to occur. Flooding is the temporary covering of the land surface by flowing water. It can occur on rivers and streams during periods of heavy rain.

These data are gathered from many sources. The most precise evaluation of flood-prone areas is based on hydrologic studies. Such soil profile characteristics as thin strata of gravel or sand on the surface, an irregular decrease in organic carbon with increasing depth, and little or no horizon development indicate a flood-prone soil. Maps from the Federal Emergency Management Agency also are consulted for information. Debris lines and debris hanging in trees are observed during mapping to estimate flood levels. Local residents along rivers and streams are consulted for recollections of flood levels and frequency.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Detailed engineering surveys provide more specific information on the extent of flooding than do soil data. They delineate flood-prone areas at specific flood frequency levels.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

Ponding Frequency and Duration

Table 19 gives information on ponding frequency, duration, and depth and the months in which ponding can be expected to occur. Ponding is standing water in a closed depression. Evidence of ponding is gathered during soil mapping in the survey area. Indicators of ponding include water lines around tree trunks, vegetation, features on aerial photography, and soil profile characteristics. The susceptibility of the soil to ponding impacts land use for homes, building sites, and sanitary facilities. Timing and duration of ponding are critical factors and impact plant species in an area.

Frequency is the number of times ponding occurs over a period of time. The classes are:

Rare.—Ponding is unlikely but possible under unusual, wetter conditions; the chance of ponding is about 0 to 5 percent in any year or ponding may occur about 0 to 5 times in 100 years.

Occasional.—Ponding is expected infrequently under usual weather conditions; the chance of ponding is about 5 to 50 percent in a year or ponding may occur about 5 to 50 times in 100 years.

Frequent.—Ponding is likely to occur under usual weather conditions; the chance of ponding is more than 50 percent in any year or ponding may occur more than 50 times in 100 years.

Duration is the average length of time that ponding occurs. The classes are: *very brief,* less than 2 days; *brief,* 2 to 7 days; *long,* 7 to 30 days; and *very long,* more than 30 days.

Depth of ponding is reported in feet above the soil surface.

Month is the calendar month or months in which ponding is expected.

Soil Moisture Status

Table 20 provides information related to runoff and soil moisture status, or seasonal high water table, by depth throughout the year. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from storms of long duration.

The four hydrologic soil groups are:

Group A. Soils that have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils that have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils that have a slow infiltration rate when thoroughly wet. These consist chiefly of soils that have a layer that impedes the downward movement of water or of soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils that have a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Soil moisture status is the mean monthly soil water state at a specified depth in the soil. It is a recording of the temporal conditions of water states in the soil. Soil moisture impacts plant growth, ease of excavation, soil strength, soil chemical interactions, and many other important soil characteristics and processes.

Soil moisture status is estimated in the field during soil mapping. It can be measured by using such instruments as tensiometers or moisture resistance blocks over time. Soil moisture status is reported in classes related to soil water tension, or suction.

The classes are reported as follows:

Dry.—Water is held at greater than, or equal to, 15 bars of suction.

Moist.—Water is held at less than 15 bars but more than, or equal to, 0.01 bars (or 0.0005 bars for coarse-textured soils).

Wet.—Water is held at less than 0.01 bars of suction (or 0.005 bars for coarse-textured soils); free water is present.

Depth is reported in feet below the soil surface. The upper boundary depth of a layer described as in the "wet" class can be interpreted as the water table depth.

Month reported is the time span in which the specified moisture status is likely to occur.

Physical and Chemical Analyses of Selected Soils

The results of physical analyses of several typical pedons in the survey area are reported in table 21. The results of chemical analyses are reported in table 22. The data are for soils sampled at carefully selected sites. Unless otherwise indicated, the pedons are typical of the series. They are described in the section "Soil Series and Their Morphology." Selected pedons of Pickwick and Lobelville soils were analyzed by the Natural Resources Conservation Service, National Soil Survey Laboratory, Lincoln, Nebraska, and by the Tennessee Agricultural Experiment Station Laboratory, Knoxville, Tennessee. These analyses were made in support of a research study of geomorphology and soils on stream terraces in the middle part of Tennessee.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(11)*.

Very coarse sand—(1-2 mm fraction) estimates of the percentages of weight of all material between 1 and 2 mm (3B1).

Coarse sand—(0.5-1 mm fraction) estimates of the percentages of weight of all material between 0.5 and 1 and 2 mm (3B2).

Medium sand—(0.25-0.5 mm fraction) estimates of the percentages of weight of all material between 0.25 and 0.5 mm (3A1).

Fine sand—(0.1-0.25 mm fraction) estimates of the percentages of weight of all material between 0.1 and 0.25 mm (3A1).

Very fine sand—(0.05-0.1 mm fraction) estimates of the percentages of weight of all material between 0.05 and 0.1 mm (3A1).

Total sand—(0.05-2 mm fraction) estimates of the percentages of weight of all material between 0.05 and 2 mm (3A1).

Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all material less than 2 mm (3A1).

Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1).

Carbonate clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1d).

Bulk density—of material less than 2 mm, saran-coated clods field moist (4A1a), $^{1}/_{3}$ bar (4A1d), ovendry (4A1h).

Organic carbon—wet combustion. Walkley-Black modified acid-dichromate, ferric sulfate titration (6A1c).

Organic carbon—dry combustion (6A2d).

Extractable phosphorus—Bray P-1 (6S3).
Extractable cations—ammonium acetate pH 7.0, EDTA-alcohol separation; calcium (6N2a), magnesium (6O2a); flame photometry; sodium (6P2a), potassium (6Q2a).
Extractable acidity—barium chloride-triethanolamine IV (6H5a).
Cation-exchange capacity—ammonium acetate, pH 7.0, steam distillation (5A8b).
Cation-exchange capacity—sum of cations (5A3a).
Base saturation—ammonium acetate, pH 7.0 (5C1).
Base saturation—sum of cations, TEA, pH 8.2 (5C3).
Reaction (pH)—1:1 water dilution (8C1f).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(15)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 23 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, mixed, thermic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows

standards in the “Soil Survey Manual” *(13)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(15)* and in “Keys to Soil Taxonomy” *(14)*. Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section “Detailed Soil Map Units.”

Armour Series

The Armour series consists of very deep, well drained soils on stream terraces (fig. 16). These soils formed in older alluvium. Slopes range from 0 to 12 percent.

Typical pedon of Armour silt loam, 2 to 5 percent slopes; USGS Little Lot quadrangle; lat. 35 degrees 48 minutes 12 seconds N. and long. 87 degrees 21 minutes 27 seconds W.; in idle cropland:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak thick platy structure parting to weak medium granular; friable; many very fine roots; few fine pores; few fine iron-manganese concretions; moderately acid; abrupt wavy boundary.

Bt1—8 to 17 inches; strong brown (7.5YR 4/6) silt loam; weak fine subangular blocky structure; friable; common fine roots; few fine and medium pores; few fine iron-manganese concretions; moderately acid; gradual smooth boundary.

Bt2—17 to 28 inches; strong brown (7.5YR 4/6) silt loam; weak fine subangular blocky structure; friable; common fine roots; few fine and medium pores; common distinct discontinuous clay films on faces of peds; few fine iron-manganese concretions; common medium cylindrical wormcasts; common medium cylindrical insectcasts; moderately acid; gradual smooth boundary.

Bt3—28 to 41 inches; brown (7.5YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; few fine and medium pores; common distinct discontinuous dark brown (7.5YR 3/4) clay films on faces of peds and in pores; few fine iron-manganese concretions; common medium cylindrical wormcasts; common medium cylindrical insectcasts; strongly acid; clear wavy boundary.

2Bt4—41 to 58 inches; strong brown (7.5YR 5/6) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots; common fine and medium pores; common prominent discontinuous dark brown (7.5YR 3/4) clay films on faces of peds and in pores; few fine iron-manganese concretions; common medium cylindrical wormcasts; common medium cylindrical insectcasts; strongly acid; gradual wavy boundary.

2Bt5—58 to 75 inches; strong brown (7.5YR 5/6) clay loam; weak medium and coarse subangular blocky structure; firm; common fine and medium pores; common prominent discontinuous dark brown (7.5YR 3/4) clay films on faces of peds and in pores; common prominent discontinuous manganese or iron-manganese stains on faces of peds; common fine iron-manganese concretions; common medium cylindrical wormcasts; common medium cylindrical insectcasts; strongly acid; gradual wavy boundary.

2CB—75 to 87 inches; 50 percent strong brown (7.5YR 5/6) and 50 percent dark brown (7.5YR 3/4) clay loam; weak coarse subangular blocky structure; friable; few fine pores; few prominent discontinuous dark brown (7.5YR 3/4) clay films on faces of peds and in pores; few prominent discontinuous manganese or iron-manganese stains on faces of peds; common soft masses of iron-manganese; common medium cylindrical wormcasts; common medium cylindrical insectcasts; chert gravel concentrated at upper boundary; strongly acid.

Depth to bedrock is more than 60 inches. Gravel ranges from 0 to 10 percent in the Ap and Bt horizons and from 0 to 15 percent in the 2Bt and 2CB horizons. Each

Figure 16.—Profile of Armour silt loam. Armour soils are very deep and well drained and have a well preserved topsoil. Scale is in feet.

horizon is moderately acid or strongly acid, but the surface layer is less acid where limed.

The Ap horizon has hue of 10YR, value of 4, and chroma of 3 or 4. It is silt loam or, where severely eroded, silty clay loam.

In some pedons a thin transitional horizon separates the Ap and Bt horizons. It has colors and textures similar to those of the Ap horizon.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam.

The 2Bt horizon has colors similar to those of the Bt horizon. It is silt loam, silty clay loam, or clay loam.

The 2CB horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 4 to 6. It

Figure 17.—Profile of Arrington silt loam. Successive flooding is evident where recent strata overlies an older and darker layer at a depth of about 3 feet. Scale is in feet.

is silt loam, silty clay loam, or clay loam. It has none to common mottles in shades of brown.

Arrington Series

The Arrington series consists of very deep, well drained soils that formed in medium textured alluvium on flood plains (fig. 17). These soils are mainly along the Duck River and some of its tributaries. Slopes range from 0 to 2 percent.

Typical pedon of Arrington silt loam, frequently flooded; USGS Littlelot quadrangle; lat. 35 degrees 48 minutes 16 seconds N. and long. 87 degrees 21 minutes 44 seconds W.; in a cultivated field:

Ap—0 to 10 inches; dark brown (10YR 3/3) silt loam; moderate fine granular structure; very friable; many very fine and fine roots; neutral; abrupt boundary.
A—10 to 36 inches; dark brown (10YR 3/3) silt loam; weak fine granular structure; very friable; common very fine and fine roots; common very fine and fine tubular pores; neutral; gradual boundary.
C—36 to 60 inches; brown (10YR 4/3) silt loam; common strata of yellowish brown (10YR 5/4) silt loam; massive; friable; common very fine and fine roots; common very fine and fine tubular pores; common pockets of black charcoal; neutral.

Depth to bedrock is more than 60 inches. Reaction ranges from slightly acid to neutral in each horizon. Gravel ranges, by volume, from 0 to 5 percent in the solum and from 0 to 10 percent in the C horizon.

The Ap or A horizon has hue of 10YR, value of 3, and chroma of 2 or 3. It is silt loam.

Some pedons have a Bwb horizon that is below a depth of about 36 inches. The horizon has colors similar to those of the A horizon. It is silty clay loam or silt loam.

The C horizon has hue of 10YR, value of 4, and chroma of 3. It is silt loam. It has few or common strata with higher value and chroma.

Barfield Series

The Barfield series consists of shallow, well drained soils that formed in residuum derived from limestone. These soils are on steep hillsides of the Outer Nashville Basin. Slopes range from 20 to 70 percent.

Typical pedon of Barfield-Rock outcrop complex, 20 to 70 percent slopes; USGS Greenfield Bend quadrangle; lat. 35 degrees 43 minutes 54 seconds N. and long. 87 degrees 15 minutes 41 seconds W.; in woodland:

A—0 to 7 inches; dark brown (10YR 3/3) silty clay loam; strong medium granular structure; friable; many fine, medium, and coarse roots; about 10 percent, by volume, flagstones; slightly acid; abrupt smooth boundary.
Bw—7 to 10 inches; dark yellowish brown (10YR 4/4) clay; moderate medium subangular blocky structure; firm; common fine and medium and few coarse roots; few fine tubular pores; about 5 percent, by volume, flagstones; slightly acid; clear smooth boundary.
BC—10 to 16 inches; dark yellowish brown (10YR 4/6) clay; weak medium subangular blocky structure; firm; common fine and medium and few coarse roots; few fine tubular pores; about 5 percent, by volume, flagstones; slightly acid; clear smooth boundary.
R—16 inches; hard limestone bedrock.

Depth to bedrock ranges from 8 to 20 inches. Reaction in each horizon ranges from slightly acid to mildly alkaline. Limestone channers and flagstones range from 5 to about 10 percent throughout.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 2 or 3. It is silty clay loam.

The Bw horizon has hue of 10YR, value of 4, and chroma of 3 or 4. It is clay.

The BC horizon has hue of 10YR, value of 4, and chroma of 6. It is clay.

Biffle Series

The Biffle series consists of moderately deep, somewhat excessively drained soils on convex ridgetops and dissected hillsides of the Highland Rim. These soils formed in residuum derived from granular, tripolitic chert. Slopes range from 5 to 60 percent.

Typical pedon of Biffle gravelly silt loam, 5 to 15 percent slopes; USGS Beaverdam

Springs quadrangle; lat. 35 degrees 39 minutes 52 seconds N. and long. 87 degrees 35 minutes 24 seconds W.; in woodland:

A—0 to 2 inches; brown (10YR 5/3) gravelly silt loam; moderate fine granular structure; very friable; many very fine and fine and few medium roots; 15 percent, by volume, chert gravel; very strongly acid; abrupt wavy boundary.
E—2 to 11 inches; yellowish brown (10YR 5/4) gravelly silt loam; weak fine granular structure; very friable; common very fine, fine, and medium and few coarse roots; 15 percent, by volume, chert gravel; very strongly acid; clear wavy boundary.
Bt—11 to 32 inches; yellowish brown (10YR 5/6) gravelly silty clay loam; moderate medium subangular blocky structure; friable; common fine, medium, and coarse roots; 20 percent, by volume, chert gravel; common distinct clay films on faces of peds and chert fragments; very strongly acid; clear wavy boundary.
Cr—32 to 60 inches; highly weathered, dense bed of granular, tripolitic chert that has red, brown, and yellow stains on fragments and clay films in fragment pores.

Depth to a paralithic contact ranges from 20 to 40 inches. Depth to hard bedrock is more than 60 inches. Chert gravel ranges from 15 to 35 percent, by volume, in the control section.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. The Ap horizon, if it occurs, is 4 to 10 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. In the fine-earth fraction it is silt loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. In the fine-earth fraction it is silt loam.

The Bt horizon commonly has hue of 10YR, 7.5YR, or, in a few pedons, 5YR; value of 4 to 6; and chroma of 4 to 8. It has mottles in shades of brown, yellow, and red. In the fine-earth fraction it is silty clay loam or silt loam. In some pedons a transitional horizon separates the Bt and Cr horizons. This horizon has colors and textures similar to those of the Bt horizon.

The Cr horizon is a dense bed of granular, tripolitic chert. Colors are in shades of red, brown, yellow, and white. Some pedons have thin, diagonal seams that are more than 4 inches apart and commonly contain fine roots and clayey soil material.

Dellrose Series

The Dellrose series consists of very deep, well drained soils on colluvial hillsides and footslopes of the Outer Nashville Basin. These soils formed in gravelly colluvium underlain by residuum derived from limestone. Slopes range from 5 to 30 percent.

Typical pedon of Dellrose gravelly silt loam, 15 to 30 percent slopes, eroded (fig. 18); USGS Williamsport quadrangle; lat. 35 degrees 43 minutes 52 seconds N. and long. 87 degrees 14 minutes 35 seconds W.; in pasture:

Ap—0 to 4 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; very friable; about 15 percent, by volume, angular chert gravel; many fine and medium roots; moderately acid; abrupt smooth boundary.
BA—4 to 11 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; weak fine subangular blocky structure; friable; about 15 percent, by volume, angular chert gravel; many fine and medium roots; many fine and medium tubular pores; very strongly acid; clear smooth boundary.
Bt1—11 to 35 inches; strong brown (7.5YR 4/6) gravelly silty clay loam; moderate medium subangular blocky structure; friable; about 20 percent, by volume, angular chert gravel; common fine and medium roots; few faint clay films; many fine and medium tubular pores; very strongly acid; clear wavy boundary.
2Bt2—35 to 60 inches; strong brown (7.5YR 5/6) silty clay; strong medium and coarse angular blocky structure; firm; about 12 percent, by volume, limestone channers;

Figure 18.—Profile of Dellrose gravelly silt loam. Rock fragments without horizontal orientation are common in the permeable, colluvial parent material of Dellrose soils. The less permeable clayey textures below a depth of about 3 feet cause a hazard of landslides where steeper slopes have been altered. Scale is in feet.

common fine and medium roots; many distinct clay films; few fine tubular pores; strongly acid.

Depth to bedrock is more than 60 inches. Fragments range from 10 to 35 percent in the upper horizons and from 0 to 15 percent in the 2Bt horizon. Reaction ranges from very strongly acid to moderately acid but is less acid in the surface layer where limed.

The eroded Ap horizon has hue of 10YR or 7.5YR and value and chroma of 3 or 4. Where value is 3, the horizon is less than 6 inches thick. The horizon is silt loam.

The BA horizon, if it occurs, has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. It is commonly silty clay loam, but the range includes silt loam.

The 2Bt horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 to 8, or it is mottled in shades of yellow and brown. It is clay or silty clay.

Dickson Series

The Dickson series consists of very deep, moderately well drained soils that have a fragipan within a depth of 18 to 36 inches. These soils are on gently sloping uplands of the Highland Rim. They formed in loess and in the underlying residuum derived from limestone. Slopes range from 2 to 5 percent.

Typical pedon of Dickson silt loam, 2 to 5 percent slopes; USGS Lyles quadrangle; lat. 35 degrees 56 minutes 45 seconds N. and long. 87 degrees 17 minutes 58 seconds W.; in pasture:

Ap—0 to 5 inches; brown (10YR 4/3) silt loam; moderate medium granular structure; very friable; many very fine and fine roots; moderately acid; abrupt boundary.

Bw1—5 to 16 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; common very fine and fine roots; strongly acid; clear boundary.

Bw2—16 to 27 inches; light olive brown (2.5Y 5/6) silt loam; weak medium subangular blocky structure; friable; common very fine and fine roots; strongly acid; abrupt boundary.

Bx/E—27 to 32 inches; about 60 percent light yellowish brown (2.5Y 6/4) silt loam (Bx part); moderate medium angular structure; firm; brittle in about 75 percent of mass; about 40 percent pale brown (10YR 6/3) and light brownish gray (10YR 6/2) silt loam tongues (E part); friable; few fine black concretions; strongly acid; clear wavy boundary.

Btx—32 to 48 inches; light yellowish brown (2.5Y 6/4) silt loam; many coarse prominent light brownish gray (10YR 6/2) iron depletions; common coarse distinct yellowish brown (10YR 5/6) oxidized soft masses; moderate medium platy structure; firm; brittle in about 75 percent of mass; common fine and medium discontinuous pores; few distinct clay films on faces of peds; common fine black concretions; strongly acid; abrupt boundary.

2Bt—48 to 60 inches; strong brown (7.5YR 5/6) silty clay loam; common coarse prominent gray (10YR 6/1) iron depletions; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; brittle in about 15 percent of mass; common fine and medium discontinuous pores; common distinct clay films on faces of peds and in pores; 5 percent, by volume, chert gravel; strongly acid.

Depth to bedrock is more than 60 inches. Depth to the fragipan ranges from 18 to 36 inches. Reaction is strongly acid except where the surface layer has been recently limed. Chert fragments range from 0 to 10 percent in the Btx horizon and from 0 to 15 percent in the 2Bt horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3.

Some pedons have a thin A1 horizon that has hue of 10YR and value and chroma of 3. The A horizon is silt loam.

The Bw1 horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 6. It is silt loam.

The Bw2 horizon has hue of 2.5Y, value of 4 or 5, and chroma of 4 to 6. It is silt loam.

In the Bx/E horizon, the Bx part has hue of 2.5Y, value of 5 or 6, and chroma of 4 to

6. It is silt loam or silty clay loam. The E part has hue of 10YR, value of 5 to 7, and chroma of 2 to 4. It is silt loam.

The Btx horizon has hue of 2.5Y, value of 5 or 6, and chroma of 4 to 6. It has mottles, or redoximorphic features, that range from few to many and that are in shades of brown, yellow, red, and gray. The horizon is silt loam or silty clay loam.

The 2Bt horizon has hue of 7.5YR, value of 5, and chroma of 6 to 8. It has mottles, or redoximorphic features, that range from few to many and that are in shades of brown, yellow, red, and gray. In some pedons the matrix has no dominant color. In the fine-earth fraction the horizon is silty clay loam, silty clay, or clay.

Egam Series

The Egam series consists of very deep, well drained soils on flood plains. The soils formed in fine-textured alluvium. They are mainly along the Duck River and some of its tributaries. Slopes range from 0 to 2 percent.

Typical pedon of Egam silt loam, frequently flooded; USGS Littlelot quadrangle; lat. 35 degrees 47 minutes 55 seconds N. and long. 87 degrees 20 minutes 40 seconds W.; in pasture:

Ap—0 to 8 inches; dark brown (10YR 3/3) silt loam; weak medium granular structure; very friable; many very fine and fine roots; slightly acid; abrupt boundary.

Bw1—8 to 18 inches; dark brown (10YR 3/3) silty clay loam; moderate fine subangular blocky structure; firm; common very fine roots; common very fine tubular pores; few black concretions; slightly acid; gradual boundary.

Bw2—18 to 44 inches; dark brown (10YR 3/3) silty clay; moderate medium subangular blocky structure; firm; few very fine roots; common very fine and few fine tubular pores; few black concretions; moderately acid; clear boundary.

Bw3—44 to 60 inches; brown (10YR 4/3) clay; moderate fine subangular blocky structure; firm; few very fine roots; common very fine and few fine tubular pores; few black concretions; common dark brown films in pores; moderately acid.

Depth to bedrock is more than 60 inches. Reaction ranges from neutral to moderately acid.

The A or Ap horizon has hue of 10YR, value of 3, and chroma of 2 or 3. It is silt loam.

The upper part of the Bw horizon is part of the mollic epipedon. It has hue of 10YR, value of 3, and chroma of 2 or 3. The lower part of the Bw horizon has hue of 10YR, value of 4, and chroma of 3 or 4. It has none to common brownish mottles, iron depletions, and black concretions. The horizon is silty clay loam, silty clay, or clay.

Gladdice Series

The Gladdice series consists of moderately deep, well drained soils on hillsides of the Outer Nashville Basin. These soils formed in residuum derived from limestone. Slopes range from 5 to 40 percent.

Typical pedon of Gladdice silty clay loam in an area of the Gladdice-Mimosa complex, 15 to 40 percent slopes, very rocky; USGS Williamsport quadrangle; lat. 35 degrees 44 minutes 51 seconds N. and long. 87 degrees 14 minutes 50 seconds W. in woodland:

A—0 to 8 inches; dark brown (10YR 3/3) silty clay loam; strong coarse granular structure; friable; many fine, medium, and coarse roots; many fine tubular pores; about 10 percent limestone channers and flagstones; slightly acid; abrupt wavy boundary.

BA—8 to 12 inches; brown (10YR 4/3) silty clay; strong medium subangular blocky

structure; firm; many fine and medium and common coarse roots; common fine tubular pores; about 12 percent limestone channers and flagstones; moderately acid; clear wavy boundary.

Bt1—12 to 17 inches; dark yellowish brown (10YR 4/4) clay; strong medium subangular and angular blocky structure; very firm; common fine and medium and few coarse roots; few faint clay films; about 8 percent limestone channers and flagstones; moderately acid; clear wavy boundary.

Bt2—17 to 28 inches; yellowish brown (10YR 5/6) clay; strong medium subangular and angular blocky structure; very firm; common fine roots; few fine tubular pores; common pressure faces; few faint clay films; about 2 percent limestone channers and flagstones; few fine black concretions; moderately acid; abrupt wavy boundary.

Bt3—28 to 31 inches; light olive brown (2.5Y 5/6) clay; common faint yellowish brown (10YR 5/6) and few faint light yellowish brown (2.5Y 6/4) mottles; strong medium angular blocky structure; very firm; common fine roots; few fine tubular pores; common pressure faces; few faint clay films; few fine black concretions; neutral.

R—31 inches; hard limestone bedrock.

Depth to bedrock ranges from 20 to 40 inches. Reaction ranges from moderately acid to mildly alkaline. Rock fragments range from 0 to 15 percent in all horizons.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is silty clay loam. It ranges from 7 to 10 inches in thickness.

The BA horizon, where it occurs, has hue of 10YR, value of 4, and chroma of 3. It is silty clay or clay.

The Bt horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 6. In most pedons it has mottles in shades of brown or olive in the lower part. It is clay.

Some pedons have BC and C horizons that have hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 6. They have mottles in shades of brown or olive. They are clay.

Guthrie Series

The Guthrie series consists of very deep, poorly drained soils in shallow depressions on uplands and stream terraces of the Highland Rim. These soils have a fragipan in the subsoil. They formed in loess or in local alluvium derived from loess. Slopes range from 0 to 1 percent.

Typical pedon of Guthrie silt loam, ponded; USGS Lyles quadrangle; lat. 35 degrees 56 minutes 46 seconds N. and long. 87 degrees 16 minutes 50 seconds W.; in pasture:

Ap—0 to 6 inches; grayish brown (10YR 5/2) silt loam; common fine distinct strong brown (7.5YR 5/8) oxidized rhizospheres; weak medium granular structure; very friable; many very fine and fine roots; many fine tubular pores; very strongly acid; abrupt boundary.

Eg—6 to 14 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct light yellowish brown (10YR 6/4) oxidized soft masses; common fine prominent strong brown (7.5YR 5/8) oxidized rhizospheres; weak medium subangular blocky structure; friable; common very fine and fine roots; common fine tubular pores; about 2 percent, by volume, chert gravel; very strongly acid; abrupt boundary.

Bg—14 to 30 inches; gray (10YR 6/1) silty clay loam; many medium distinct yellowish brown (10YR 5/4) oxidized soft masses and common fine prominent strong brown (7.5YR 5/8) oxidized rhizospheres; moderate medium subangular blocky structure; friable; few very fine and fine roots; common fine tubular pores; few distinct clay films; about 2 percent, by volume, chert gravel; very strongly acid; clear boundary.

Btxg1—30 to 50 inches; gray (10YR 6/1) silty clay loam; many coarse prominent strong brown (7.5YR 5/8) oxidized soft masses; common vertical veins of silty clay; moderate medium subangular blocky structure; firm, brittle in about 70

percent of mass; few distinct clay films; about 2 percent, by volume, chert gravel; very strongly acid; clear boundary.

Btxg2—50 to 60 inches; gray (N 6/0) silty clay loam; common coarse prominent strong brown (7.5YR 5/8) oxidized soft masses; many vertical veins of silty clay; moderate medium subangular blocky structure; firm, brittle in about 50 percent of mass; few distinct clay films; about 2 percent, by volume, chert gravel; very strongly acid.

Depth to bedrock is more than 60 inches. Reaction ranges from extremely acid to strongly acid, except where the surface has been limed. Gravel and chert make up less than 3 percent of the volume above the fragipan and less than 15 percent in the fragipan.

The Ap horizon has hue of 10YR, value of 4 to 6, and chroma of 2 or 3 or hue of 2.5Y, value of 4 or 5, and chroma of 2. It is silt loam.

The Eg horizon has hue of 10YR, value of 5 or 6, and chroma of 2 or 3 or hue of 2.5Y, value of 5 or 6, and chroma of 2 or 3. It is silt loam.

The Bg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or less. In many pedons it has few to many oxidized, soft masses in shades of red, brown, and yellow. It is silt loam or silty clay loam.

The Btxg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or less. It has few to many oxidized, soft masses in shades of yellow, brown, and red. In some pedons it has an evenly mottled pattern of gray, yellow, red, and brown and does not have a dominant color. It is silt loam or silty clay loam.

Hampshire Series

The Hampshire series consists of deep, well drained soils on summits and hillsides of the Outer Nashville Basin. These soils formed in residuum derived from phosphatic limestone. Slopes range from 5 to 30 percent.

Typical pedon of Hampshire silty clay loam, 12 to 25 percent slopes, severely eroded; USGS Greenfield Bend quadrangle; lat. 35 degrees 43 minutes 28 seconds N. and long. 87 degrees 15 minutes 22 seconds W.; in woodland:

Ap—0 to 4 inches; dark yellowish brown (10YR 4/6) silty clay loam; moderate medium granular structure; friable; many very fine roots; few medium and coarse roots; about 10 percent siltstone channers and chert gravel; strongly acid; abrupt boundary.

Bt1—4 to 20 inches; strong brown (7.5YR 4/6) clay loam; moderate fine subangular blocky structure; friable; many fine and medium roots; common very fine and fine tubular pores; few faint clay films; about 12 percent siltstone channers; few very fine black concretions; moderately acid; clear boundary.

Bt2—20 to 42 inches; strong brown (7.5YR 4/6) clay; moderate medium subangular blocky structure; few fine distinct brownish yellow (10YR 6/6) mottles; firm; common fine and medium roots; few very fine and fine tubular pores; common distinct clay films; about 8 percent siltstone channers; common fine black concretions; moderately acid; gradual boundary.

2C—42 to 50 inches; yellowish brown (10YR 5/6) very channery clay loam that has a few seams of clay; few fine prominent light gray (2.5Y 7/2) mottles; weak coarse platy structure from weathered channers; firm; few fine and medium roots; about 35 percent siltstone and limestone channers; few fine black concretions; moderately acid.

2Cr—50 to 60 inches; weathered, thin-bedded siltstone that in places has hard strata of limestone.

Depth to weathered bedrock ranges from 40 to 60 inches. Fragments of siltstone

range from 0 to 15 percent in the Ap and Bt horizons and are as much as 50 percent in the C horizon. Reaction is strongly acid or moderately acid throughout the profile.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is silt loam or, in severely eroded areas, silty clay loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. In the lower part it has common mottles in shades of brown and yellow. It is clay loam, silty clay loam, silty clay, or clay.

The 2C horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. In the fine-earth fraction it is clay loam, silty clay loam, or loam. It has mottles in shades of brown, yellow, and gray.

Hawthorne Series

The Hawthorne series consists of moderately deep, somewhat excessively drained soils on steep hillsides in the northeastern section of the county. These soils formed in residuum derived from interbedded siltstone and limestone. Slopes range from 30 to 60 percent.

Typical pedon of Hawthorne gravelly silt loam in an area of Hawthorne-Sulphura association, steep; USGS Primm Springs quadrangle; lat. 35 degrees 52 minutes 18 seconds N. and long. 87 degrees 14 minutes 14 seconds W.; in woodland:

A—0 to 3 inches; brown (10YR 4/3) gravelly silt loam; weak medium granular structure; very friable; common fine and medium roots; about 20 percent, by volume, fragments of chert; very strongly acid; abrupt smooth boundary.

E—3 to 12 inches; yellowish brown (10YR 5/4) gravelly silt loam; weak medium granular structure; very friable; common fine and medium roots; about 20 percent, by volume, fragments of chert; very strongly acid; clear wavy boundary.

Bw—12 to 26 inches; yellowish brown (10YR 5/6) very gravelly silt loam; weak medium subangular blocky structure; friable; few fine and medium roots matted around fragments; about 45 percent, by volume, fragments of chert; very strongly acid; clear wavy boundary.

Cr—26 to 60 inches; alternating strata of hard chert that are 4 to 6 inches thick; 1- to 2-foot-thick layers of weathered siltstone channers that have many distinct clay films and thin seams of silty clay loam.

Depth to paralithic contact ranges from 20 to 40 inches. Reaction ranges from strongly acid to extremely acid. Fragments range from 10 to 35 percent in the A and E horizons and from 35 to 60 percent in the Bw horizon. Depth to hard bedrock is more than 60 inches.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. In the fine-earth fraction it is silt loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. In the fine-earth fraction it is silt loam.

The Bw horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. In the fine-earth fraction it is silt loam or silty clay loam.

The Cr horizon is highly fractured, horizontally bedded, weathered siltstone and chert interlayered with thin seams of silty clay loam.

Humphreys Series

The Humphreys series consists of very deep, well drained soils on footslopes and stream terraces. These soils formed in gravelly alluvium or colluvium washed from uplands. Slopes range from 0 to 12 percent.

Typical pedon of Humphreys gravelly silt loam, 2 to 5 percent slopes; USGS

Pleasantville quadrangle; lat. 35 degrees 43 minutes 15 seconds N. and long. 87 degrees 37 minutes 41 seconds W.; in idle cropland:

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; weak fine granular structure; very friable; many very fine and fine and few coarse roots; about 15 percent, by volume, angular chert gravel; moderately acid; abrupt smooth boundary.

Bt1—9 to 19 inches; brown (7.5YR 4/4) gravelly silt loam; moderate medium subangular blocky structure; friable; common very fine and fine roots; many fine tubular pores; about 15 percent, by volume, angular chert gravel; few faint clay films; strongly acid; clear wavy boundary.

Bt2—19 to 27 inches; brown (7.5YR 4/4) gravelly silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; common very fine and fine roots; many fine tubular pores; about 25 percent, by volume, angular chert gravel; few faint clay films; strongly acid; clear wavy boundary.

BC—27 to 39 inches; yellowish brown (10YR 5/6) very gravelly loam; weak fine subangular blocky structure; friable; common very fine and fine roots; many very fine and fine tubular pores; about 35 percent, by volume, angular chert gravel; strongly acid; clear wavy boundary.

C—39 to 60 inches; dark yellowish brown (10YR 4/4) extremely gravelly sandy loam; single grained; loose; few very fine and fine roots; some interstices are void of soil material; about 80 percent, by volume, angular chert gravel; strongly acid.

Depth to bedrock is more than 60 inches. The reaction is commonly strongly acid throughout the profile but ranges to moderately acid. Chert gravel ranges from 15 to 35 percent in the solum and is as much as 80 percent in the C horizon.

The Ap horizon has hue of 10YR and value and chroma of 3 or 4. Where value is 3, the surface layer is 6 inches thick or less. In the fine-earth fraction the horizon is loam in a few pedons or silt loam.

Some pedons have a thin, transitional horizon between the Ap and Bt horizons that has colors and textures similar to those of the Ap and Bt horizons.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. In the fine-earth fraction it is commonly silt loam but ranges to loam and silty clay loam.

The BC horizon has colors similar to those of the Bt horizon. In the fine-earth fraction it is commonly loam but ranges to silt loam. Some pedons do not have a BC horizon.

The C horizon has colors similar to those of the Bt horizon. In the fine-earth fraction it is loam or sandy loam. It has none to common mottles in shades of brown to gray.

The Humphreys soils in Hickman County are considered a taxadjunct to the Humphreys Series because the color of the surface layer is slightly too high in value or the surface layer is slightly too thin that what is defined for the series. These differences, however, do not significantly affect the use and management of the soils.

Lax Series

The Lax series consists of very deep, moderately well drained soils that have a gravelly fragipan within a depth of 1.5 to 3.0 feet. These soils are on ridgetops on the Highland Rim. They formed in loess, gravelly marine sediments, and residuum derived from limestone. Slopes range from 2 to 12 percent.

Typical pedon of Lax silt loam, 5 to 12 percent slopes; USGS Spot quadrangle; lat. 35 degrees 55 minutes 42 seconds N. and long. 87 degrees 33 minutes 08 seconds W.; in woodland:

A—0 to 2 inches; brown (10YR 4/3) silt loam; moderate fine granular structure; very

friable; many very fine and fine and few medium roots; many very fine and fine pores; about 2 percent, by volume, gravel fragments; very strongly acid; abrupt smooth boundary.

E—2 to 10 inches; yellowish brown (10YR 5/4) silt loam; weak medium granular structure; very friable; many very fine and fine and few medium roots; many very fine and fine pores; about 2 percent, by volume, gravel fragments; very strongly acid; gradual smooth boundary.

Bt1—10 to 20 inches; strong brown (7.5YR 4/6) silt loam; moderate fine and medium subangular blocky structure; friable; common fine, medium, and coarse roots; common fine tubular pores; few faint clay films on faces of peds; about 2 percent, by volume, gravel fragments; very strongly acid; gradual smooth boundary.

Bt2—20 to 27 inches; yellowish brown (10YR 5/6) silt loam; moderate fine and medium subangular blocky structure; friable; common fine, medium, and coarse roots; common fine tubular pores; few faint clay films on faces of peds; about 5 percent, by volume, gravel fragments; very strongly acid; abrupt wavy boundary.

2Btx1—27 to 41 inches; yellowish brown (10YR 5/4) gravelly silt loam; common medium distinct light brownish gray (10YR 6/2) iron depletions; common medium distinct strong brown (7.5YR 4/6) oxidized soft masses; moderate coarse platy structure; very firm and brittle in nearly 100 percent of mass; few medium roots in the upper 2 inches of the horizon; many fine and common medium vesicular pores; common distinct clay films on faces of peds; few fine black concretions; about 15 percent, by volume, gravel fragments; very strongly acid; clear wavy boundary.

2Btx2—41 to 50 inches; mottled strong brown (7.5YR 4/6), light yellowish brown (10YR 5/4), and light brownish gray (10YR 6/2) gravelly silty clay loam; moderate coarse subangular blocky structure; very firm and brittle in nearly 80 percent of mass; few fine roots in vertical seams about 10 inches apart; many fine and common medium vesicular pores; many distinct clay films on faces of peds; about 25 percent, by volume, gravel fragments; very strongly acid; clear wavy boundary.

3Bt—50 to 60 inches; red (2.5YR 4/6) gravelly silty clay loam; common medium distinct strong brown (7.5YR 4/6) mottles; light brownish gray (10YR 6/2) iron depletions; moderate medium subangular blocky structure; firm; few fine roots; few fine vesicular pores; many distinct clay films on faces of peds; about 25 percent, by volume, gravel fragments; very strongly acid.

Depth to bedrock is more than 60 inches. Depth to fragipan ranges from about 1.5 to 3 feet. Reaction is strongly acid or very strongly acid except where the surface layer has been limed. Quartz gravel and chert range, by volume, from 0 to 15 percent in the A, E, and Bt horizons; from 15 to 35 percent in the 2Btx horizon; and from 15 to 70 percent in the 2Bt horizon.

The A horizon has hue of 10YR, value of 4, and chroma of 2 or 3. It is silt loam.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 4. It is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam.

The 2Btx horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 6. In the fine-earth fraction it is silt loam or silty clay loam. It has few to many redoximorphic features in shades of brown, yellow, red, and gray.

The 3Bt horizon has hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 4 to 8. It has few or common mottles, or redoximorphic features, in shades of gray, yellow, brown, and red. In the fine-earth fraction it is silty clay loam, silty clay, or clay.

Lindside Series

The Lindside series consists of very deep, moderately well drained soils on flood plains. The soils formed in alluvium. They are in troughs and seep areas along the Duck River and some of its tributaries. Slopes are 0 to 2 percent.

Typical pedon of Lindside silt loam, frequently flooded; USGS Littlelot quadrangle; lat. 35 degrees 46 minutes 17 seconds N. and long. 87 degrees 17 minutes 30 seconds W.; in pasture:

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam; massive; hard; few fine strong brown (7.5YR 5/8) oxidized rhizospheres; common fine black concretions and stains; many very fine and fine roots; many fine tubular pores; about 2 percent, by volume, gravel 1 inch or less in diameter; moderately acid; abrupt smooth boundary.

A—6 to 12 inches; brown (10YR 4/3) silt loam; massive; hard; common fine strong brown (7.5YR 5/8) oxidized rhizospheres; many fine black concretions and stains; many very fine and fine roots; many fine tubular pores; moderately acid; clear smooth boundary.

Bw1—12 to 22 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; moderately hard; few faint grayish brown (10YR 5/2) iron depletions and few fine strong brown (7.5YR 5/8) oxidized rhizospheres; common fine black concretions and stains; common very fine and fine roots; many fine tubular pores; about 2 percent, by volume, gravel 1 inch or less in diameter; slightly acid; clear smooth boundary.

Bw2—22 to 37 inches; brown (10YR 4/3) silt loam; weak medium subangular blocky structure parting to weak fine granular; moist, friable; few fine strong brown (7.5YR 5/8) oxidized rhizospheres; common fine black concretions and stains; common very fine and fine roots; common fine tubular pores; about 2 percent, by volume, gravel 1 inch or less in diameter; slightly acid; abrupt smooth boundary.

Bg—37 to 55 inches; dark grayish brown (10YR 4/2) silt loam; weak medium subangular blocky structure; moist, friable; common fine strong brown (7.5YR 5/8) oxidized rhizospheres and pores and common fine light olive brown (2.5Y 5/4) oxidized soft masses on peds; few fine black stains; few very fine and fine roots; many fine tubular pores; about 2 percent, by volume, gravel 1 inch or less in diameter; slightly acid; clear smooth boundary.

Btb—55 to 63 inches; mottled grayish brown (10YR 5/2) and yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; moist, friable; common fine strong brown (7.5YR 5/8) oxidized soft masses on peds; few fine black stains; few faint clay films on faces of peds; few very fine and fine roots; common fine and few medium tubular pores; about 5 percent, by volume, gravel 1 inch or less in diameter; slightly acid.

Depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to neutral in each horizon.

The Ap or A horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. In the fine-earth fraction it is silt loam.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. It has mottles with chroma of 2 or less within a depth of 24 inches. It is silt loam or silty clay loam.

The Bg horizon has hue of 10YR, value of 4 to 6, and chroma of 2. It has mottles in shades of gray and brown. It is silt loam or silty clay loam.

The Btb horizon has colors similar to those of the Bw or Bg horizon. It is silty clay loam. Some pedons do not have a Btb horizon.

Some pedons have a C horizon. This horizon has colors similar to those of the B horizon in the typical pedon. It is silt loam or loam.

Lobelville Series

The Lobelville series consists of very deep, moderately well drained soils that formed in loamy alluvium on flood plains. They are in seep areas and in slightly

depressed areas along smaller streams and branches. Slopes range from 0 to 2 percent.

Typical pedon of Lobelville silt loam, occasionally flooded; USGS Beaverdam Springs quadrangle; lat. 35 degrees 44 minutes 15 seconds N. and long. 87 degrees 31 minutes 36 seconds W.; in pasture:

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium granular structure; friable; many very fine and fine roots; many very fine and fine tubular pores; about 5 percent, by volume, chert gravel; moderately acid; abrupt smooth boundary.

AB—6 to 12 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; many very fine and fine roots; many very fine and fine tubular pores; about 7 percent, by volume, chert gravel; moderately acid; clear smooth boundary.

Bw1—12 to 19 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; common coarse faint pale brown (10YR 6/3) iron depletions; common very fine and fine roots; many very fine and fine tubular pores; about 12 percent, by volume, chert gravel; moderately acid; clear wavy boundary.

Bw2—19 to 26 inches; pale brown (10YR 6/3) gravelly silt loam; few soft black concretions; weak medium subangular blocky structure; friable; common medium faint light brownish gray (10YR 6/2) iron depletions; common very fine and fine roots; common fine and medium pores; about 15 percent, by volume, chert gravel; moderately acid; clear smooth boundary.

Bg—26 to 38 inches; light brownish gray (10YR 6/2) gravelly silt loam; weak medium subangular blocky structure; brittle; common coarse distinct yellowish brown (10YR 5/4) and common coarse prominent reddish yellow (7.5YR 6/8) oxidized soft masses; common soft black concretions; few fine roots; few fine and medium pores; about 20 percent, by volume, chert gravel; strongly acid; clear wavy boundary.

BCg—38 to 52 inches; grayish brown (10YR 5/2) extremely gravelly loam; weak medium subangular blocky structure; friable; many distinct grayish brown (10YR 5/2) films on fragments; few very fine and fine roots; many medium interstitial pores; about 75 percent, by volume, chert gravel; strongly acid; clear wavy boundary.

Cg—52 to 60 inches; grayish brown (10YR 5/2) extremely gravelly sandy loam; single grained; friable; many distinct (10YR 5/2) films on fragments; few very fine and fine roots; many medium interstitial pores; about 90 percent, by volume, chert gravel; strongly acid.

Depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to neutral in each horizon. Gravel ranges, by volume, from 0 to about 20 percent in the upper 24 inches, from 10 to about 30 percent to a depth of about 40 inches, and to as much as 90 percent below a depth of 40 inches.

The Ap horizon has hue of 10YR, value of 4, and chroma of 2 to 4. In the fine-earth fraction it is silt loam.

A transitional horizon separates the A and Bw horizons. It has colors and textures similar to those of the A and Bw horizons.

The Bw horizon has hue of 10YR, value of 4 to 6, and chroma of 3 or 4. It has iron depletions with chroma of 2 or less within a depth of 24 inches. In the fine-earth fraction it is silty clay loam in a few pedons or silt loam or loam.

The Bg or BCg horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It has none to common oxidized, soft masses in shades of yellow and brown. In the fine-earth fraction it is silt loam, loam, silty clay loam, or clay loam.

The Cg or C horizon has hue of 10YR, value of 5 or 6, and chroma of 1 to 4. In

some pedons it is mottled in shades of gray and brown. In the fine-earth fraction it is sandy loam, loam, or silt loam.

Melvin Series

The Melvin series consists of very deep, poorly drained soils that formed in medium textured alluvium on flood plains. These soils are in seep areas and in slightly depressed areas along major streams and branches. Slopes are 0 to 1 percent.

Typical pedon of Melvin silt loam, frequently flooded; USGS Pleasantville quadrangle; lat. 35 degrees 37 minutes 47 seconds N. and long. 87 degrees 42 minutes 00 seconds W.; in an idle field:

Ap—0 to 6 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; slightly sticky; common fine faint gray (10YR 6/1) iron depletions and common fine distinct yellowish brown (10YR 5/6) oxidized rhizospheres; about 2 percent, by volume, chert gravel; many very fine and fine roots; slightly acid; abrupt boundary.

Bg1—6 to 27 inches; gray (10YR 5/1) silt loam; weak fine subangular structure; slightly sticky; common fine prominent strong brown (7.5YR 5/6) oxidized rhizospheres; about 2 percent, by volume, chert gravel; common very fine and fine roots; slightly acid; clear boundary.

Bg2—27 to 46 inches; gray (10YR 5/1) silt loam; weak fine subangular structure; slightly sticky; few fine prominent strong brown (7.5YR 5/6) oxidized rhizospheres; about 5 percent, by volume, chert gravel; few very fine and fine roots; slightly acid; clear boundary.

Cg—46 to 60 inches; gray (N 5/0) silty clay loam; massive; sticky; few fine prominent strong brown (7.5YR 5/6) oxidized rhizospheres and few fine distinct light yellowish brown (2.5Y 6/4) oxidized soft masses within peds; about 5 percent, by volume, chert gravel; slightly acid.

Depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to neutral in each horizon. Oxidized rhizospheres or oxidized soft masses in shades of brown are few or common in each horizon. Chert gravel ranges, by volume, from 0 to 5 percent to a depth of 30 inches and from 0 to 20 percent below a depth of 30 inches.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. It is silt loam.

The Bg horizon has hue of 10YR to 5Y, value of 5 or 6, and chroma of 1 or 2. It is silt loam.

The Cg horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 0 to 2. It is silt loam or silty clay loam.

Mimosa Series

The Mimosa series consists of deep, well drained soils on hillsides. These soils formed in residuum derived from phosphatic limestone. They are mainly on side slopes of hills mainly along the Duck River. Slopes range from 5 to 40 percent.

Typical pedon of Mimosa silt loam in an area of Gladdice-Mimosa complex, 15 to 40 percent slopes, very rocky; USGS Littlelot quadrangle; lat. 35 degrees 38 minutes 26 seconds N. and long. 87 degrees 38 minutes 54 seconds W.; in woodland:

A—0 to 3 inches; dark brown (10YR 3/3) silt loam; moderate medium granular structure; very friable; many fine and medium roots; moderately acid; abrupt wavy boundary.

BA—3 to 10 inches; brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; few coarse roots; common fine and medium tubular pores; moderately acid; clear wavy boundary.

Bt1—10 to 25 inches; dark yellowish brown (10YR 4/6) clay; moderate coarse

subangular blocky structure; firm; few fine and medium roots; few pressure faces; few fine black concretions and stains; moderately acid; clear wavy boundary.

Bt2—25 to 45 inches; yellowish brown (10YR 5/6) clay; common fine prominent light yellowish brown (2.5YR 6/4) mottles and few fine prominent strong brown (7.5YR 5/8) mottles just above bedrock; moderate coarse subangular blocky structure; firm; few fine roots; few pressure faces; common fine black concretions and stains; slightly acid.

R—45 inches; hard limestone bedrock.

Depth to bedrock ranges from 40 to 60 inches. Chert gravel ranges, by volume, from 0 to 10 percent in the A horizon and from 0 to 5 percent in the Bt horizon.

The A horizon has hue of 10YR and value and chroma of 3 or 4. Where value is 3, the horizon is less than 7 inches thick. It is silt loam.

The BA horizon has textures and colors similar to those of the Bt and A horizons. Some pedons do not have a BA horizon.

The Bt horizon has hue of 10YR to 7.5YR, value of 4 or 5, and chroma of 6 to 8. It is commonly clay or silty clay. It has none to common mottles in shades of brown and red.

Minvale Series

The Minvale series consists of very deep, well drained soils on escarpments of stream terraces and footslopes. These soils formed in old alluvium or colluvium. Slopes range from 12 to 30 percent.

Typical pedon of Minvale silty clay loam, 12 to 30 percent slopes, severely eroded; USGS Texas Hollow quadrangle; lat. 35 degrees 55 minutes 09 seconds N. and long. 87 degrees 28 minutes 51 seconds W.; in pasture:

Ap—0 to 5 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium granular structure; friable; about 10 percent, by volume, rounded gravel; many very fine and fine roots; moderately acid; abrupt smooth boundary.

Bt1—5 to 9 inches; strong brown (7.5YR 4/6) gravelly silty clay loam; moderate fine subangular blocky structure; friable; common very fine and fine roots; many fine and medium tubular pores; about 15 percent, by volume, rounded gravel; few faint clay films; strongly acid; clear wavy boundary.

Bt2—9 to 28 inches; red (2.5YR 4/6) gravelly silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine and fine roots; common distinct clay films; many very fine and fine tubular pores; about 15 percent, by volume, rounded gravel; strongly acid; clear wavy boundary.

Bt3—28 to 60 inches; red (2.5YR 4/6) gravelly silty clay loam; moderate coarse subangular blocky structure; friable; few brown (7.5YR 5/4) streaks and pockets; few very fine and fine roots; many prominent clay films; common very fine and fine tubular pores; about 15 percent, by volume, rounded gravel; strongly acid.

Depth to bedrock is more than 60 inches. Gravel ranges, by volume, from about 5 to 35 percent in the Ap horizon and from about 15 to 35 percent in the Bt horizon. Reaction is strongly acid except where the surface layer has been limed.

The Ap horizon has hue of 10YR or 7.5YR, value of 4, and chroma of 3 to 6. In the fine-earth fraction it is silt loam. In severely eroded areas it is silty clay loam.

In some pedons a thin transitional horizon separates the Ap and Bt horizons. It has colors and textures similar to those of the Ap and Bt horizons.

The Bt horizon has hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 6 to 8. In the fine-earth fraction it is commonly silty clay loam but ranges to clay loam.

Figure 19.—Profile of Mountview silt loam. Two different parent materials are evident where loess overlies clayey residuum derived from cherty limestone. Scale is in feet.

Mountview Series

The Mountview series consists of very deep, well drained soils on upland ridgetops of the Highland Rim. These soils formed in loess and in the underlying residuum derived from limestone (fig. 19). Slopes range from 2 to 12 percent.

Typical pedon of Mountview silt loam, 2 to 5 percent slopes; USGS Texas Hollow

quadrangle; lat. 35 degrees 57 minutes 28 seconds N. and long. 87 degrees 25 minutes 30 seconds W.; in pasture:

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine and common medium roots; many fine and medium tubular pores; about 2 percent, by volume, chert gravel; strongly acid; abrupt smooth boundary.

Bt—6 to 25 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; many fine and common medium roots; common fine and medium tubular pores; about 1 percent, by volume, chert gravel; very strongly acid; clear smooth boundary.

Bt/E—25 to 35 inches; about 80 percent strong brown (7.5YR 5/6) silty clay loam (Bt part); few medium prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; about 85 percent friable, 15 percent slightly brittle; few fine roots; common fine tubular and few discontinuous pores; few distinct clay films on faces of peds; 20 percent light yellowish brown (10YR 6/4) silt loam pockets (E part); few fine distinct light brownish gray (10YR 6/2) silt coatings on faces of peds; moderate medium subangular blocky structure; friable; few fine roots; about 8 percent, by volume, chert gravel; very strongly acid; clear wavy boundary.

2Bt—35 to 60 inches; red (2.5YR 4/6) gravelly silty clay; many coarse prominent yellowish brown (10YR 5/6) and common medium distinct strong brown (7.5YR 5/6) mottles; moderate coarse subangular blocky structure; firm; few fine prominent light brownish gray (10YR 6/2) iron depletions; many distinct clay films on faces of peds; about 15 percent, by volume, chert gravel; very strongly acid.

Depth to bedrock is more than 60 inches. The upper part of these soils formed in loess. The soils commonly are about 30 inches thick but range from about 22 to 36 inches in thickness. In the lower part they formed in residuum derived from cherty limestone. Coarse fragments are commonly chert. They range, by volume, from 0 to about 5 percent to a depth of 30 inches and from about 5 to 35 percent below a depth of 30 inches. Reaction in each horizon is very strongly acid or strongly acid, except where the surface layer has been limed.

The Ap horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. It is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam.

The Bt part of the Bt/E horizon, where it occurs, has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam. The E part has hue of 10YR, value of 6 or 7, and chroma of 3 or 4. It is silt loam. Brittleness in the Bt/E horizon ranges from 0 to about 40 percent.

The 2Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. It has few to many mottles, or redoximorphic features, in shades of brown, yellow, gray, and red. In some pedons it does not have a matrix color but is mottled in shades of brown, yellow, and red. In the fine-earth fraction it is silty clay loam, silty clay, or clay.

Norene Series

The Norene series consists of very deep, poorly drained soils in slight depressions on low stream terraces. These soils formed in alluvium. They are in abandoned meanders along the Duck River near Coble and Littlelot. Slopes are 0 to 1 percent.

Typical pedon of Norene silt loam, ponded; USGS Coble quadrangle; lat. 35 degrees 47 minutes 43 seconds N. and long. 87 degrees 38 minutes 38 seconds W.; in pasture:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; moderate medium

granular structure; friable; few fine prominent yellowish red (5YR 5/8) oxidized rhizospheres; many very fine and fine roots; strongly acid; abrupt boundary.

Eg—6 to 9 inches; light grayish brown (10YR 6/2) silt loam; weak medium granular structure; friable; common fine prominent yellowish red (5YR 5/8) oxidized rhizospheres; common very fine and fine roots; common fine tubular pores; strongly acid; clear boundary.

BEg—9 to 18 inches; light brownish gray (2.5Y 6/2) silt loam; weak medium subangular blocky structure; friable; common medium distinct yellowish brown (10YR 5/6) oxidized rhizospheres; few medium faint light olive brown (2.5Y 5/4) oxidized soft masses; few very fine and fine roots; few fine tubular pores and many fine vesicular pores at lower boundary; strongly acid; abrupt boundary.

Btg1—18 to 24 inches; dark gray (10YR 4/1) silty clay loam; common coarse distinct brown (10YR 5/3) mottles; moderate medium subangular blocky structure; friable; few medium prominent yellowish red (5YR 5/8) oxidized soft masses; few very fine and fine roots; few fine tubular pores; common distinct clay films on faces of peds; strongly acid; gradual boundary.

Btg2—24 to 53 inches; dark gray (10YR 4/1) silty clay loam; common coarse distinct brown (10YR 5/3) mottles; moderate medium subangular blocky structure; friable; common medium prominent strong brown (7.5YR 5/8) oxidized soft masses; few very fine and fine roots; few fine tubular pores; common distinct clay films on faces of peds; strongly acid; clear boundary.

Cg—53 to 60 inches; dark gray (10YR 4/1) clay; massive; firm; common medium distinct dark yellowish brown (10YR 4/6) oxidized soft masses; about 2 percent, by volume, pebbles; moderately acid.

Depth to bedrock is more than 60 inches. Reaction ranges from strongly acid to neutral. Gravel ranges, by volume, from 0 to 5 percent in each horizon. Each horizon has few to many redoximorphic features in shades of brown or red.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2. It is silt loam.

The Eg and BEg horizons have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2. They are silt loam.

The Btg horizon has hue of 10YR to 2.5Y, value of 4 or 5, and chroma of 1 or hue of 10YR to 2.5Y, value of 6, and chroma of 2. It is silty clay loam or silt loam.

The Cg horizon has colors similar to those of the Bg horizon. It is clay, silty clay, or silty clay loam.

Paden Series

The Paden series consists of very deep, moderately well drained soils that have a fragipan within a depth of 1.5 to 3.0 feet. These soils are on stream terraces. They formed in loess and in the underlying old alluvium or valley fill. Slopes range from 1 to 12 percent.

Typical pedon of Paden silt loam, 1 to 5 percent slopes; USGS Whitfield quadrangle; lat. 35 degrees 48 minutes 27 seconds N. and long. 87 degrees 33 minutes 47 seconds W.; in pasture:

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine and few medium and coarse roots; moderately acid; abrupt smooth boundary.

Bw1—6 to 16 inches; dark yellowish brown (10YR 4/6) silt loam; weak medium subangular blocky structure; friable; slightly sticky; many fine and few medium and coarse roots; common fine and medium tubular pores; very strongly acid; clear boundary.

Bw2—16 to 25 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few brittle moderate fine angular blocky peds;

slightly sticky; common fine and medium roots; common fine and medium tubular pores; very strongly acid; clear wavy boundary.

Btx/E—25 to 33 inches; about 70 percent light olive brown (2.5Y 5/6) silt loam (Btx part); few fine distinct brownish yellow (10YR 6/8) mottles; moderate fine angular blocky structure; firm, brittle in about 75 percent of mass; common fine discontinuous pores; common faint strong brown (7.5YR 4/6) clay films on faces of peds; about 2 percent, by volume, chert gravel; few black concretions; very strongly acid; about 30 percent light gray (10YR 7/2) streaks and pockets of silt loam (E part); a 1/4- to 1/2-inch thick horizontal streak of E material at the base of horizon; weak fine subangular blocky structure; friable; few fine roots; few fine tubular pores; very strongly acid; abrupt wavy boundary.

Btx—33 to 41 inches; light olive brown (2.5Y 5/6) silt loam; few fine distinct brownish yellow (10YR 6/8) mottles; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm, brittle in about 90 percent of mass; common medium prominent gray (10YR 5/1) iron depletions that have a finer texture; few fine roots; many fine discontinuous pores; common distinct strong brown (7.5YR 4/6) clay films on faces of peds; about 8 percent, by volume, chert gravel; common black concretions; very strongly acid; abrupt irregular boundary.

2Bt—41 to 60 inches; yellowish red (5YR 5/6) gravelly clay loam; common medium faint red (2.5YR 4/6) and common medium prominent yellowish brown (10YR 5/6) mottles; moderate fine subangular blocky structure; firm; common medium prominent gray (10YR 5/1) iron depletions that have finer texture; few fine tubular pores; many prominent strong brown (7.5YR 4/6) clay films on faces of peds and in pores; 15 percent, by volume, chert gravel; very strongly acid.

Depth to bedrock is more than 60 inches. Depth to a fragipan ranges from 18 to 36 inches. Reaction is strongly acid or very strongly acid except where the surface layer has been recently limed. Coarse fragments, mostly chert gravel, range, by volume, from 0 to 5 percent to a depth of 30 inches and from 0 to 20 percent below a depth of 30 inches.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. It is silt loam.

The Bw or Bt horizon has hue of 10YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam.

The Btx part of the Btx/E horizon, where it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 6. It is silt loam or silty clay loam. The E part has hue of 10YR, value of 6 or 7, and chroma of 1 or 2. It is silt loam.

The Btx horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 6. It is silt loam or silty clay loam.

The 2Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8. It has few to many mottles, or redoximorphic features, in shades of brown, yellow, red, and gray. In some pedons it is mottled without a dominant color. In the fine-earth fraction it is clay loam or silty clay.

Pickwick Series

The Pickwick series consists of very deep, well drained soils on high stream terraces. These soils formed in older alluvium. Slopes range from 2 to 12 percent.

Typical pedon of Pickwick silt loam, 2 to 5 percent slopes; USGS Littlelot quadrangle; lat. 35 degrees 47 minutes 24 seconds N. and long. 87 degrees 22 minutes 01 second W.; in pasture:

Ap1—0 to 4 inches; brown (10YR 4/3) silt loam, yellowish brown (10YR 5/4) dry; moderate medium platy structure; friable; many very fine and fine roots throughout;

common very fine pores; few fine iron-manganese concretions; moderately acid; abrupt smooth boundary.

Ap2—4 to 8 inches; brown (10YR 4/3) silt loam, brown (7.5YR 5/4) dry; massive; friable; many very fine and fine roots throughout; many very fine pores; common fine iron-manganese concretions; moderately acid; abrupt wavy boundary.

Bt1—8 to 16 inches; strong brown (7.5YR 4/6) silty clay loam; weak fine and medium subangular blocky structure; friable; common fine roots throughout; common fine pores; few fine iron-manganese concretions; few faint clay films in root channels and pores; moderately acid; clear smooth boundary.

Bt2—16 to 31 inches; yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots throughout; common fine and few medium pores; common fine iron-manganese concretions; few faint clay films on faces of peds and in pores; common medium cylindrical wormcasts; common medium cylindrical insectcasts; strongly acid; gradual smooth boundary.

Bt3—31 to 41 inches; yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots throughout; common fine and few medium pores; common distinct clay films on faces of peds; few manganese or iron-manganese stains; common fine iron-manganese concretions; common medium cylindrical wormcasts; common medium cylindrical insectcasts; very strongly acid; clear smooth boundary.

Bt4—41 to 59 inches; red (2.5YR 4/6) silty clay; moderate medium subangular blocky structure; firm; few fine roots throughout; common fine and few medium pores; many distinct continuous dark red (2.5YR 3/6) clay films on vertical and horizontal faces of peds; common manganese or iron-manganese stains; common fine iron-manganese concretions; common medium cylindrical wormcasts; common medium cylindrical insectcasts; very strongly acid; gradual smooth boundary.

Bt5—59 to 79 inches; red (2.5YR 4/6) silty clay; light yellowish brown (10YR 6/4) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; common fine and few medium and coarse pores; many distinct continuous dark red (2.5YR 3/6) clay films on vertical and horizontal faces of peds; common manganese or iron-manganese stains; common fine iron-manganese concretions; common medium cylindrical wormcasts; common medium cylindrical insectcasts; very strongly acid; diffuse smooth boundary.

Bt6—79 to 118 inches; red (2.5YR 4/6) silty clay; light yellowish brown (10YR 6/4) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; common fine and few medium and coarse pores; many distinct continuous dark red (2.5YR 3/6) clay films on vertical and horizontal faces of peds; common manganese or iron-manganese stains; common fine iron-manganese concretions; common medium cylindrical wormcasts; common medium cylindrical insectcasts; strongly acid.

Depth to bedrock is more than 60 inches. Coarse fragments range from 0 to 5 percent in the A and Bt horizons. The 2Bt horizon, where it occurs, has colors and textures similar to those of the lower part of the Bt horizon. It has 5 to 30 percent coarse fragments.

The Ap horizon has hue of 10YR, value of 4, and chroma of 3 or 4. It is silt loam. In severely eroded areas the surface layer has hue of 7.5YR, value of 4, and chroma of 4 to 6. It is silty clay loam.

The upper part of the Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. It is silty clay loam. The lower part has hue of 5YR or 2.5YR, value of 3 to 5, and chroma of 4 to 8. It is commonly silty clay loam, silty clay, or clay. It has mottles that range to common in shades of brown. The Bt horizon has few or common, very fine or fine, round, black concretions.

Figure 20.—Profile of Riverby gravelly sandy loam, frequently flooded. Riverby soils are high in content of gravel and sand. This causes droughtiness and limits the absorption of nutrients and pesticides. Scale is in feet.

Riverby Series

The Riverby series consists of very deep, excessively drained soils on flood plains. These soils formed in gravelly alluvium (fig. 20). Slopes range from 0 to 2 percent.

Typical pedon of Riverby gravelly sandy loam, frequently flooded; USGS Whitfield quadrangle; lat. 35 degrees 50 minutes 33 seconds N. and long. 87 degrees 34 minutes 51 seconds W.; in pasture:

A1—0 to 5 inches; dark brown (10YR 3/3) gravelly sandy loam; moderate medium and coarse granular structure; friable; many very fine, fine, and medium roots; many fine tubular pores; about 25 to 30 percent, by volume, chert gravel; moderately acid; abrupt smooth boundary.

A2—5 to 12 inches; brown (10YR 4/3) gravelly sandy loam; weak medium granular structure; very friable; many very fine, fine, and medium roots; many fine tubular pores; about 25 to 30 percent, by volume, chert gravel; strongly acid; abrupt smooth boundary.

C1—12 to 17 inches; dark yellowish brown (10YR 4/4) extremely gravelly loamy sand; single grained; loose; common fine roots; many medium interstitial pores; about 70 to 80 percent, by volume, chert gravel; strongly acid; abrupt smooth boundary.

C2—17 to 21 inches; dark yellowish brown (10YR 4/4) very gravelly loam; weak medium granular structure; friable; common fine and few medium roots; many fine tubular pores; about 40 to 50 percent, by volume, chert gravel; strongly acid; abrupt wavy boundary.

C3—21 to 43 inches; dark yellowish brown (10YR 4/4) extremely gravelly coarse sandy loam; single grained; loose; few fine and medium roots; many medium interstitial pores; about 95 percent, by volume, chert gravel; moderately acid; abrupt wavy boundary.

C4—43 to 60 inches; dark yellowish brown (10YR 4/4) extremely gravelly coarse sandy loam; single grained; loose; few fine roots; many medium interstitial pores; about 90 percent, by volume, chert gravel; about 5 percent chert cobbles; moderately acid.

Depth to bedrock is more than 60 inches. Gravel ranges, by volume, from 10 to 60 percent in the A horizon and from 35 to 95 percent in the C horizon. The content of cobbles commonly increases as depth increases and ranges from 5 to 50 percent in the C horizon. Some pedons have thin layers of sandy material without rock fragments. Reaction ranges from strongly acid to neutral in all horizons.

The A horizon or Ap horizon, where it occurs, has hue of 10YR, value of 3 to 5, and chroma of 2 to 4. Where value and chroma are less than 3.5, the thickness of the horizon is 6 inches or less. In the fine-earth fraction the horizon is loam or sandy loam.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. In most pedons it has thin strata that have value of 3 and chroma of 3. In the fine-earth fraction it is coarse sandy loam. In most pedons it has thin strata of loam and loamy sand.

Saffell Series

The Saffell series consists of very deep, well drained soils on convex hillsides. These soils formed in loamy and gravelly marine deposits on uplands in the northwest part of the county. Slopes range from 12 to 60 percent.

Typical pedon of Saffell gravelly fine sandy loam, 12 to 20 percent slopes; USGS Spot quadrangle; lat. 35 degrees 59 minutes 20 seconds N. and long. 87 degrees 30 minutes 24 seconds W.; in woodland:

A—0 to 4 inches; brown (10YR 4/3) gravelly fine sandy loam; weak fine granular structure; very friable; many very fine and fine and common medium roots; about 25 percent, by volume, gravel; strongly acid; abrupt smooth boundary.

E—4 to 13 inches; yellowish brown (10YR 5/4) gravelly fine sandy loam; weak fine granular structure; very friable; many very fine and fine, common medium, and few coarse roots; about 30 percent, by volume, gravel; very strongly acid; clear smooth boundary.

Bt—13 to 37 inches; strong brown (7.5YR 5/6) very gravelly clay loam; moderate medium subangular blocky structure; friable; few fine and medium roots; about 50 percent, by volume, gravel and few cobbles; few distinct clay films on faces of peds; strongly acid; clear wavy boundary.

C—37 to 60 inches; strong brown (7.5YR 5/6) very gravelly sandy loam; massive; friable; about 60 percent, by volume, gravel fragments; very strongly acid.

Depth to bedrock is more than 60 inches. Coarse fragments as much as 3 inches across range from 15 to 35 percent in the A and E horizons and from 35 to 60 percent in the Bt and C horizons. Reaction is strongly acid or very strongly acid.

The A horizon has hue of 10YR, value of 4, and chroma of 2 to 4. In the fine-earth fraction it is fine sandy loam.

The E horizon has hue of 10YR, value of 4 or 5, and chroma of 4 to 6. In the fine-earth fraction it is fine sandy loam, loam, or silt loam.

The Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. In the fine-earth fraction it is clay loam, sandy clay loam, fine sandy loam, or loam.

The C horizon has hue of 7.5YR, value of 4 to 6, and chroma of 4 to 8. In the fine-earth fraction it is loamy sand, sandy loam, or sandy clay loam.

Sengtown Series

The Sengtown series consists of very deep, well drained soils on ridgetops and hillsides of the Highland Rim. These soils formed in residuum derived from limestone (fig. 21). Slopes range from 5 to 60 percent.

Typical pedon of Sengtown gravelly silt loam, 20 to 60 percent slopes; USGS Lyles quadrangle; lat. 35 degrees 56 minutes 07 seconds N. and long. 87 degrees 20 minutes 34 seconds W.

A—0 to 2 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; very friable; many fine, common medium, and few coarse roots; about 15 percent, by volume, chert gravel; very strongly acid; abrupt wavy boundary.

E—2 to 10 inches; yellowish brown (10YR 5/4) gravelly silt loam; weak fine subangular blocky structure parting to granular; very friable; many fine, common medium, and few coarse roots; many fine tubular pores; about 15 percent, by volume, chert gravel; very strongly acid; clear wavy boundary.

Bt1—10 to 18 inches; strong brown (7.5YR 5/6) gravelly silty clay loam; few medium distinct yellowish brown (10YR 5/4) and yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; many fine, common medium, and few coarse roots; many fine and medium tubular pores; about 20 percent, by volume, chert gravel; few faint clay films; very strongly acid; clear wavy boundary.

Bt2—18 to 29 inches; red (2.5YR 4/6) gravelly silty clay; common fine distinct reddish yellow (7.5YR 6/6) mottles; moderate medium subangular blocky structure; firm; common fine and medium and few coarse roots; few fine and medium tubular pores; about 30 percent, by volume, chert gravel; many distinct clay films; very strongly acid; clear wavy boundary.

Bt3—29 to 60 inches; red (2.5YR 4/6) gravelly clay; common medium prominent light yellowish brown (10YR 6/4) and few medium prominent light gray (10YR 7/2) mottles below a depth of about 40 inches; moderate coarse subangular blocky structure; firm; few fine and medium roots; few fine and medium tubular pores; about 25 percent, by volume, chert gravel; many distinct clay films; very strongly acid.

Depth to bedrock is more than 60 inches. Reaction is very strongly acid to moderately acid, but the surface layer is less acid where limed. The content of chert ranges, by volume, from 15 to 35 percent in the solum.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. In the fine-earth fraction it is silt loam. Some pedons have an Ap horizon, which has colors and textures similar to those of the A horizon.

The E horizon, where it occurs, has hue of 10YR or 7.5YR, value of 5, and chroma of 4 to 6. In the fine-earth fraction it is silt loam.

The Bt1 horizon has hue of 7.5YR to 5YR, value of 4 or 5, and chroma of 6. It has

Figure 21.—Profile of Sengtown gravelly silt loam. Gravelly clay textures are below a depth of about 18 inches. Scale is in feet.

none to common mottles in shades of brown and red. In the fine-earth fraction it is silty clay loam.

The Bt2 and Bt3 horizons have hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. They have few or common mottles in shades of red, brown, yellow, and gray. In the fine-earth fraction they are silty clay or clay.

Sullivan Series

The Sullivan series consists of very deep, well drained soils that formed in loamy alluvium on flood plains. These soils are mainly along large tributary streams of the Duck River. Slopes range from 0 to 2 percent.

Typical pedon of Sullivan silt loam, occasionally flooded; USGS Texas Hollow quadrangle; lat. 35 degrees 58 minutes 17 seconds N. and long. 87 degrees 26 minutes 48 seconds W.; in pasture:

Ap—0 to 9 inches; dark brown (10YR 4/3) silt loam; weak medium granular structure; very friable; many fine and common medium roots; many fine tubular pores; moderately acid; abrupt smooth boundary.

Bw—9 to 24 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; many fine roots; many fine tubular pores; moderately acid; clear smooth boundary.

C—24 to 36 inches; dark yellowish brown (10YR 4/6) loam; massive; friable; few medium dark brown (7.5YR 4/4) coatings on faces of peds; common medium distinct light yellowish brown (10YR 6/4) strata of silt loam; many fine roots; common fine tubular pores; about 5 percent, by volume, chert gravel; moderately acid; abrupt smooth boundary.

Ab—36 to 50 inches; dark brown (10YR 4/3) silt loam; weak medium granular structure; friable; common fine roots; few fine tubular pores; about 5 percent, by volume, chert gravel; moderately acid; clear smooth boundary.

Bwb—50 to 56 inches; dark brown (10YR 4/3) loam; weak fine subangular blocky structure; friable; common fine roots; few fine tubular pores; about 5 percent, by volume, chert gravel; moderately acid; clear smooth boundary.

Cb—56 to 60 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; single grained; very friable; few fine roots; about 25 percent, by volume, chert gravel; moderately acid.

Depth to bedrock is more than 60 inches. Fragments range from 0 to 15 percent to a depth of 40 inches and from 5 to 50 percent below a depth of 40 inches. Reaction ranges from moderately acid to neutral.

The Ap or A horizon has hue of 10YR and value and chroma of 3 or 4. The Ab horizon, where it occurs, has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. These horizons are silt loam or loam.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. It is silt loam or loam. The Bwb horizon, if it occurs, has colors and textures similar to those of the Bw horizon.

The C horizon has hue of 10YR, value of 4, and chroma of 3 to 6. In the fine-earth fraction it is sandy loam, loam, or silt loam. Some pedons have alternating layers with a fine-earth fraction of sandy loam, loam, and silt loam. The Cb horizon, if it occurs, has colors and textures similar to those of the C horizon.

Sulphura Series

The Sulphura series consists of moderately deep, somewhat excessively drained soils on highly dissected hillsides. These soils formed in residuum derived from interbedded siltstone and shale. Slopes range from 30 to 60 percent.

Typical pedon of Sulphura gravelly silt loam in an area of Hawthorne-Sulphura association, steep; USGS Primm Springs quadrangle; lat. 35 degrees 52 minutes 12 seconds N. and long. 87 degrees 14 minutes 01 second W.; in woodland:

A—0 to 4 inches; dark brown (10YR 3/3) gravelly silt loam; weak fine granular

structure; very friable; many fine, medium, and coarse roots; about 25 percent, by volume, angular fragments of chert; strongly acid; abrupt smooth boundary.

Bw1—4 to 10 inches; yellowish brown (10YR 5/4) very channery silt loam; weak fine subangular structure; very friable; common medium and fine roots; about 50 percent, by volume, channers of siltstone and angular fragments of chert; moderately acid; clear wavy boundary.

Bw2—10 to 21 inches; yellowish brown (10YR 5/4) very channery silt loam; weak fine subangular blocky structure; friable; common fine, medium, and coarse roots between peds and around fragments; about 60 percent, by volume, channers of siltstone; moderately acid; abrupt wavy boundary.

Cr—21 to 25 inches; weathered siltstone.

R—25 inches; hard, gray siltstone bedrock

Depth to hard bedrock ranges from 20 to 40 inches. Reaction is strongly acid or moderately acid in the upper part and ranges from strongly acid to slightly acid in the lower part. Fragments range from 10 to 25 percent in the A horizon and from 35 to 60 percent in the Bw horizon.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3. In the fine-earth fraction it is silt loam.

The Bw horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. In the fine-earth fraction it is silt loam or silty clay loam.

The Cr horizon is horizontally bedded, highly fractured siltstone.

The R layer is hard, gray siltstone bedrock.

Tarklin Series

The Tarklin series consists of very deep, moderately well drained soils that have a fragipan within a depth of 20 to 40 inches. These soils are on footslopes and stream terraces. They formed in colluvium and alluvium. Slopes range from 5 to 12 percent.

Typical pedon of Tarklin gravelly silt loam in an area of Tarklin-Humphreys complex, 5 to 12 percent slopes, eroded; USGS Greenfield Bend quadrangle; lat. 35 degrees 43 minutes 10 seconds N. and long. 87 degrees 22 minutes 29 seconds W.; in pasture:

Ap—0 to 6 inches; dark yellowish brown (10YR 4/3) gravelly silt loam; weak fine granular structure; very friable; many fine and medium roots; many fine and medium tubular pores: about 15 percent chert gravel; strongly acid; abrupt smooth boundary.

Bt1—6 to 10 inches; strong brown (10YR 5/6) silt loam; weak fine subangular blocky structure; friable; many fine and medium roots; many fine and medium tubular pores; few faint clay films; about 5 percent chert gravel; very strongly acid; clear smooth boundary.

Bt2—10 to 22 inches; strong brown (7.5YR 4/6) silty clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; many fine and medium tubular pores; common distinct clay films; about 5 percent chert gravel; very strongly acid; clear smooth boundary.

Bt3—22 to 35 inches; strong brown (7.5YR 4/6) gravelly silty clay loam; weak medium subangular blocky structure; friable; common fine and medium roots; many fine and medium tubular pores; few faint clay films; about 25 percent chert gravel; very strongly acid; abrupt wavy boundary.

Btx—35 to 60 inches; mottled yellowish brown (10YR 5/6), pale brown (10YR 6/3), and light brownish gray (10YR 6/2) gravelly silt loam; massive; very firm and brittle in about 90 percent of mass; common fine discontinuous vesicular pores; few faint clay films; about 35 percent chert gravel; very strongly acid.

Depth to bedrock is more than 60 inches. Reaction is very strongly acid or strongly

acid except where the surface layer has been limed. Chert gravel ranges, by volume, from about 15 to 25 percent in the Ap horizon, from 5 to 25 percent in the Bt horizon, and to 60 percent in the Btx horizon.

The Ap horizon has hue of 10YR, value of 4, and chroma of 3 or 4. In the fine-earth fraction it is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. In the fine-earth fraction it is silt loam or silty clay loam.

The Btx horizon commonly does not have a dominant matrix color but has mottles that have hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 2 to 8. In the fine-earth fraction it is silt loam or silty clay loam.

Trace Series

The Trace series consists of very deep, well drained soils on low stream terraces. These soils formed in silty alluvium over extremely gravelly alluvium. Slope ranges from 0 to 5 percent.

Typical pedon of Trace silt loam, 0 to 2 percent slopes, occasionally flooded; USGS Coble quadrangle; lat. 35 degrees 47 minutes 20 seconds N. and long. 87 degrees 37 minutes 54 seconds W.; in hayland of tall fescue and ladino clover:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; common very fine and fine roots; common fine pores; few fine rounded gravel; slightly acid; abrupt smooth boundary.

Bt—8 to 36 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; common fine pores; few faint clay films on faces of peds and in root channels; few fine rounded gravel; moderately acid; clear smooth boundary.

2BC—36 to 41 inches; brown (7.5YR 4/4) gravelly silt loam; weak fine and medium subangular blocky structure; very friable; about 25 percent, by volume, rounded gravel; moderately acid; abrupt smooth boundary.

2C—41 to 60 inches; dark yellowish brown (10YR 4/6) extremely gravelly sandy loam; weak fine subangular blocky structure; loose; about 80 percent, by volume, rounded gravel; moderately acid.

Depth to bedrock is more than 60 inches. Depth to rapidly permeable gravelly horizons ranges from 30 to 60 inches. Each horizon is moderately acid or strongly acid, but the surface layer is less acid where limed. Gravel ranges, by volume, from 0 to about 10 percent in the A and Bt horizons, from 15 to 60 percent in the 2BC horizon, and from 60 to 90 percent in the 2C horizon.

The Ap horizon has hue of 10YR or 7.5YR and value and chroma of 3 or 4. Where value is 3, the horizon is less than 7 inches thick. It is silt loam.

In some pedons a thin transitional horizon separates the Ap and Bt horizons. It has colors and textures similar to those of the Ap and Bt horizons.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam.

The 2BC horizon has the same colors as the Bt horizon. In the fine-earth fraction it is silt loam, silty clay loam, loam, or clay loam.

The 2C horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. In the fine-earth fraction it is sandy loam, loam, or silt loam.

Woodmont Series

The Woodmont series consists very deep, somewhat poorly drained soils that have a fragipan in the subsoil. These soils formed in silty alluvium. They are on low stream terraces. Slopes are 0 to 1 percent.

Typical pedon of Woodmont silt loam, rarely flooded; USGS Coble quadrangle; lat. 35 degrees 47 minutes 27 seconds N. and long. 87 degrees 38 minutes 07 seconds W.; in pasture:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; common fine distinct dark yellowish brown (10YR 4/6) oxidized rhizospheres; many very fine and fine roots; slightly acid; abrupt smooth boundary.

Bw—9 to 22 inches; light yellowish brown (2.5YR 6/4) silt loam; weak fine subangular blocky structure; friable; common fine distinct light brownish gray (10YR 6/2) iron depletions on peds and common fine yellowish brown (10YR 5/6) oxidized rhizospheres; few fine black concretions; common very fine and fine roots; moderately acid; clear smooth boundary.

E/Bx—22 to 27 inches; pockets and tongues of light brownish gray (10YR 6/2) silt loam (E part); weak medium subangular blocky structure; friable; yellowish brown (10YR 5/4) silt loam (Bx part); weak coarse prismatic structure parting to weak medium platy; firm and brittle in about 75 percent of mass; few fine faint yellowish brown (10YR 5/6) oxidized soft masses; few fine black concretions; few very fine and fine roots; moderately acid; clear wavy boundary.

Btx—27 to 60 inches; light gray (10YR 7/1) silt loam; weak coarse prismatic structure; firm, brittle in about 75 percent of mass; common medium distinct yellowish brown (10YR 5/6) and light yellowish brown (2.5Y 6/4) oxidized soft masses; few faint clay films on faces of peds; few fine black concretions; moderately acid.

Depth to bedrock is more than 60 inches. Depth to the fragipan ranges from 20 to 36 inches. Reaction is moderately acid or strongly acid, except where the surface layer has been recently limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2. It is silt loam.

The Bw horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 6. It is silt loam. Iron depletions that have chroma of 2 or less are within a depth of 16 inches.

The E part of the E/Bx horizon has hue of 10YR, value of 6 or 7, and chroma of 1 or 2. It is silt loam or silt. The Bx part has hue of 10YR or 2.5Y, value of 5, and chroma of 4 to 6. It has few to many oxidized, soft masses in shades of yellow and brown. It is silt loam.

The Btx horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It has few to many oxidized, soft masses in shades of yellow and brown. In some pedons it is evenly mottled and does not have a dominant color. It is silt loam or silty clay loam.

Formation of the Soils

This section discusses the factors of soil formation and relates them to the soils in the survey area.

Factors of Soil Formation

The five factors of soil formation are parent material, time, climate, topography, and living organisms. They determine the characteristics and properties of a soil.

Parent Material

Parent material is the mass from which a soil develops. It affects the kind of soil that develops both chemically and physically. The origins of some parent materials are not well understood. However, in Hickman County they are residuum of limestone, siltstone, and tripolitic chert and transported parent material, such as loess (or windblown silt), colluvium, old alluvium, gravelly marine deposits, and recent alluvium.

A silty loess mantle caps most uplands in the county. It ranges from 2 feet to only several inches in thickness. It is the parent material of the upper part of Dickson, Mountview, and Guthrie soils. The lower part of these soils formed in fine textured residuum derived from cherty limestone. Consequently, these soils are silty in the upper part and have a layer that has more clay and some chert in the lower part.

Mimosa and Gladdice soils formed in residuum derived from limestone. Consequently, they are more clayey, have fewer coarse fragments, and have higher reaction than Biffle, Hawthorne, and Sulphura soils, which weathered from more siliceous (cherty) materials.

Dellrose soils on footslopes formed partly in colluvium derived from cherty soils. In the lower part they formed in residuum derived from limestone, like Gladdice and Mimosa soils. Consequently, Dellrose soils are gravelly in the upper part and clayey in the lower part.

Saffell soils formed in gravelly, old alluvium presumed to be ancient ocean or river deposits. They are gravelly throughout.

Soils that formed in recent alluvium reflect the material in the watershed. Arrington soils are on the flood plain of the Duck River. They are silty and have little or no gravel. They reflect the dominantly silty surface layer of the soils in the watershed. Riverby soils also formed in recent alluvium, but washed mainly from cherty soils on uplands. They have layers of extremely gravelly, loamy, and sandy material.

Parent material also can have a strong influence on natural soil fertility. For example, Armour, Arrington, Egam, and Lindside soils are in the Duck River Valley. They commonly have high phosphate levels because the alluvium has washed in part from phosphatic soils. In contrast, Riverby, Lobelville, and Humphreys soils commonly have lower phosphate levels because they formed in parent material derived mainly from soils on less fertile, cherty uplands.

Time

Soils vary considerably in age. The length of time that a soil has been forming is generally reflected in profile development. Old soils generally have better defined horizons than young soils.

In Hickman County, soils on upland ridgetops have been weathering longer than soils on active flood plains. Dickson, Mountview, and Sengtown soils are dominant on undulating ridges. They exhibit significant profile development. Soil-forming processes have had sufficient time to cause distinguishable horizons. Sufficient time has allowed the surface to become darkened with organic matter from decayed plants, for the surface and subsurface layers to be depleted with iron and clay, and for these materials to accumulate in the lower horizons. The youngest soils are on flood plains. They formed in recent alluvium washed from uplands. Riverby and Arrington soils have not been in place long enough to develop distinct subsoil horizons and in some places are still acquiring new material.

Climate

Climate is a factor of soil formation that affects the physical, chemical, and biological relationships in the soil primarily through the influence of precipitation and temperature. These relationships exert much influence on rates of soil weathering, erosion, and organic matter decomposition. The amount of leaching of nutrients in a soil is also related to the amount of rainfall and to its movement through the soil. The effects of climate also control the kinds of plants and animals that can thrive in a region. Temperature influences the kind and growth of organisms and the speed of chemical and physical reactions in a soil.

Climate varies greatly in Tennessee; however, variances across Hickman County are slight and do not cause distinct areas of different soils. The county has a warm, humid climate characteristic of the climate of the southeastern United States. Mild temperatures and abundant rainfall cause intense leaching of soluble and colloidal materials and rapid decomposition of organic matter. As these translocated materials move downward in a soil, some accumulate in lower layers and others move out of the soil. Generally, the older, well developed soils in Hickman County are more weathered, leached, and acid and have accumulated clay in the subsoil. Mountview, Sengtown, and many others have these properties. The formation of a fragipan is generally a soil phenomenon of a warm, humid climate. Dickson, Guthrie, Lax, Paden, Tarklin, and Woodmont soils all have a fragipan.

Topography

Topography includes relief, slope, landform, and aspect. It influences or modifies the effects of the other soil-forming factors. Steepness, shape, and length of slope directly influence rates of infiltration and runoff. Runoff and erosion increase simultaneously, other things being equal. In many areas stream action has caused rapid downcutting of steeper slopes and has exposed parent material to soil-forming factors. In these areas the soil profiles are not as deep as those in soils on more stable landscapes. Biffle, Hawthorne, and Sulphura soils are examples. In other areas below steeper side slopes, soils formed as a result of various forms of deposition, such as creep, soil flow, slump, or stream deposits. In these areas soils have deeper profiles because material has accumulated at the base of slopes and on flood plains. Dellrose, Humphreys, Tarklin, Arrington, Lindside, and Lobelville soils are examples.

Topography also effects changes in microclimate. For example, wooded and pastured soils on steeper slopes are generally more productive on north- and east-facing slopes than on south- and west-facing slopes. The microclimate on the north- and east-facing slopes is shaded, cooler, and moister. Some soils receive more water than adjacent soils because they are lower in elevation. They receive not only rainfall but also runoff from other soils. Some of these soils, such as Guthrie, Norene, and Melvin soils, have aquic conditions.

Living Organisms

Both small and large plants and animals, including humans, are active forces in soil development. Their effects are physical and chemical.

Organisms transfer soil material in many ways from below ground to above ground. When a tree falls, roots bring a mound of soil to the surface. Over time, both the soil is mixed and rock fragments are pulled to the surface over a large area. Windthrow mounds are caused when wind blows down trees. They are common on Biffle soils, where chert beds restrict the root zone. Ants and crawfish construct tunnels and mounds that generally contain material from the subsoil. Moving animals blend soil ingredients and make large pores for water to move through the soil. Melvin and Norene soils commonly have crawfish tunnels.

Vegetation type affects the layers forming in a soil. Organic matter from a forest is deposited on the soil surface as leaf litter. Decaying oak and hickory leaves and twigs release organic acids that promote leaching and the development of a light-colored subsurface layer. Many soils in Hickman County have these characteristics. Nutrient recycling through leaf and twig fall remains an important process in productivity of low-fertility woodland soils, such as Biffle and Saffell soils. Some soils in the county likely formed in tall, grassy vegetation. Tall grasses growing on soils high in calcium are conducive to an increase in stable organic matter. As organic matter increases, soils generally become darker colored. Egam soils are an example.

Human activities that have affected soils include clearing woodland, farming, and mining. On some soils intensive cultivation and minimal conservation have caused severe erosion. On some farms soils that are low in natural fertility are highly fertile and productive because farmers have increased soil amendments and conservation measures. In other areas past iron and phosphate mining has entirely altered natural soil characteristics and influenced subsequent land use. In Hickman County these areas have been mapped as Udarents.

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Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 2
Low	2 to 4
Moderate	4 to 6
High	6 to 8
Very high	more than 8

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport

to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channel. The hollow bed where a natural body of surface water flows or may flow.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Iron oxide and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness

varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep soils, 20 to 40 inches; shallow soils, 10 to 20 inches; and very shallow soils, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian soil material. Earthly parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured soil. Sandy clay, silty clay, or clay.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The inclined surface at the base of a hill.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic

matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table,

the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine-grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of three simple variables—hue,

value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.
Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.
Root zone. The part of the soil that can be penetrated by plant roots.
Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.
Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.
Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.
Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.
Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.
Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.
Shale. Sedimentary rock formed by the hardening of a clay deposit.
Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.
Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
Silica. A combination of silicon and oxygen. The mineral form is called quartz.
Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
Siltstone. Sedimentary rock made up of dominantly silt-sized particles.
Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.
Sinkhole. A depression in the landscape where limestone has been dissolved.
Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.
Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.
Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.
Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.
Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The outermost inclined surface at the base of a hill; part of a footslope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth’s surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1951-1990 at Centerville, Tennessee)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temp. higher than--	2 years in 10 will have-- Minimum temp. lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	48.5	24.0	36.3	73	-8	26	4.55	1.86	6.60	7	2.2
February-	54.2	26.8	40.5	77	-1	43	4.59	2.59	5.97	8	1.8
March----	63.7	34.4	49.1	85	11	129	5.29	2.75	7.38	8	0.5
April----	75.1	43.1	59.1	90	21	278	4.91	2.71	6.67	8	0.0
May------	80.8	51.3	66.1	92	30	499	4.88	2.28	7.06	7	0.0
June-----	86.9	59.2	73.1	97	41	693	3.78	2.15	5.22	6	0.0
July-----	90.1	63.5	76.8	99	49	831	4.54	2.60	6.07	7	0.0
August---	89.4	62.2	75.8	98	46	800	3.24	0.98	4.93	5	0.0
September	83.9	56.1	70.0	96	34	600	3.37	1.36	5.04	5	0.0
October--	74.1	42.9	58.5	89	22	284	2.93	1.10	4.35	5	0.0
November-	62.3	34.4	48.4	83	11	74	4.77	2.43	6.76	7	0.0
December-	51.9	27.6	39.8	73	1	34	5.20	2.20	7.49	8	0.8
Yearly:											
Average	71.7	43.8	57.8	---	---	---	---	---	---	---	---
Extreme	---	---	---	100	-10	---	---	---	---	---	---
Total--	---	---	---	---	---	4,291	52.05	43.93	59.92	81	5.3

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1951-1990 at Centerville, Tennessee)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 17	Apr. 26	May 16
2 years in 10 later than--	Apr. 12	Apr. 22	May 11
5 years in 10 later than--	Apr. 4	Apr. 13	Apr. 30
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 13	Sept. 28	Sept. 16
2 years in 10 earlier than--	Oct. 20	Oct. 6	Sept. 25
5 years in 10 earlier than-	Nov. 4	Oct. 23	Oct. 12

Table 3.—Growing Season

(Recorded in the period 1951-1990 at Centerville, Tennessee)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	192	172	144
8 years in 10	199	178	150
5 years in 10	212	190	162
2 years in 10	226	203	174
1 year in 10	234	210	181

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AmB	Armour silt loam, 2 to 5 percent slopes	3,395	0.9
AmC	Armour silt loam, 5 to 12 percent slopes	1,723	0.4
AmC3	Armour silty clay loam, 5 to 12 percent slopes, severely eroded	629	0.2
An	Arrington silt loam, frequently flooded	5,152	1.3
BaF	Barfield-Rock outcrop complex, 20 to 70 percent slopes	2,378	0.6
BbC	Biffle gravelly silt loam, 5 to 15 percent slopes	25,883	6.6
BbD	Biffle gravelly silt loam, 15 to 30 percent slopes	17,982	4.6
BbF	Biffle gravelly silt loam, 30 to 60 percent slopes	149,225	38.1
DeC2	Dellrose gravelly silt loam, 5 to 15 percent slopes, eroded	1,127	0.3
DeD2	Dellrose gravelly silt loam, 15 to 30 percent slopes, eroded	4,479	1.1
DkB	Dickson silt loam, 2 to 5 percent slopes	1,562	0.4
Eg	Egam silt loam, frequently flooded	928	0.2
GmC	Gladdice-Mimosa complex, 5 to 15 percent slopes, rocky	139	*
GmE	Gladdice-Mimosa complex, 15 to 40 percent slopes, very rocky	3,263	0.8
Gu	Guthrie silt loam, ponded	90	*
HaC2	Hampshire silt loam, 5 to 12 percent slopes, eroded	70	*
HaC3	Hampshire silty clay loam, 5 to 12 percent slopes, severely eroded	320	*
HaD3	Hampshire silty clay loam, 12 to 25 percent slopes, severely eroded	582	0.1
HgD	Hampshire-Gullied land complex, 12 to 30 percent slopes	110	*
HsF	Hawthorne-Sulphura association, steep	8,211	2.1
HuA	Humphreys gravelly silt loam, 0 to 2 percent slopes, occasionally flooded	110	*
HuB	Humphreys gravelly silt loam, 2 to 5 percent slopes	10,948	2.8
LaB	Lax silt loam, 2 to 5 percent slopes	1,030	0.3
LaC	Lax silt loam, 5 to 12 percent slopes	11,068	2.8
Ln	Lindside silt loam, frequently flooded	818	0.2
Lo	Lobelville silt loam, occasionally flooded	3,624	0.9
Me	Melvin silt loam, frequently flooded	960	0.2
MnD	Minvale gravelly silt loam, 12 to 20 percent slopes	247	*
MsD3	Minvale silty clay loam, 12 to 30 percent slopes, severely eroded	3,062	0.8
MtB	Mountview silt loam, 2 to 5 percent slopes	4,074	1.0
Nr	Norene silt loam, ponded	302	*
PaB	Paden silt loam, 1 to 5 percent slopes	2,128	0.5
PaC2	Paden silt loam, 5 to 12 percent slopes, eroded	700	0.2
PkB	Pickwick silt loam, 2 to 5 percent slopes	4,566	1.2
PkC2	Pickwick silt loam, 5 to 12 percent slopes, eroded	5,764	1.5
PkC3	Pickwick silty clay loam, 5 to 12 percent slopes, severely eroded	3,699	0.9
Ra	Riverby gravelly sandy loam, frequently flooded	8,727	2.2
SaD	Saffell gravelly fine sandy loam, 12 to 20 percent slopes	21	*
SaF	Saffell gravelly fine sandy loam, 20 to 60 percent slopes	100	*
SeC	Sengtown gravelly silt loam, 5 to 12 percent slopes	1,227	0.3
SeD2	Sengtown gravelly silt loam, 12 to 20 percent slopes, eroded	12,511	3.2
SeF	Sengtown gravelly silt loam, 20 to 60 percent slopes	13,125	3.3
SmC2	Sengtown-Mountview complex, 5 to 12 percent slopes, eroded	54,473	13.9
SrF	Sengtown-Rock outcrop complex, 20 to 60 percent slopes	266	*
Su	Sullivan silt loam, occasionally flooded	3,369	0.9
ThC2	Tarklin-Humphreys complex, 5 to 12 percent slopes, eroded	10,070	2.6
TrA	Trace silt loam, 0 to 2 percent slopes, occasionally flooded	1,440	0.4
TrB	Trace silt loam, 2 to 5 percent slopes, rarely flooded	297	*
Ua	Udarents, abandoned	1,178	0.3
Ud	Udarents, clayey	2,112	0.5
W	Water	1,700	0.4
Wm	Woodmont silt loam, rarely flooded	836	0.2
	Total	391,800	100.0

* Less than 0.1 percent.

Table 5.—Land capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of nonirrigated management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Soybeans	Tall fescue-ladino	Tobacco	Wheat
		Tons	Bu	Bu	AUM	Lbs	Bu
AmB:							
Armour----------	2e	4.0	115.0	43.0	8.0	2,900.0	53.0
AmC:							
Armour----------	3e	3.7	100.0	40.0	7.5	2,700.0	51.0
AmC3:							
Armour----------	4e	3.0	80.0	28.0	6.0	2,200.0	45.0
An:							
Arrington-------	2w	---	100.0	35.0	7.5	---	---
BaF:							
Barfield--------	7s	---	---	---	---	---	---
Rock outcrop.							
BbC:							
Biffle----------	4s	---	50.0	---	4.0	---	---
BbD:							
Biffle----------	6s	---	---	---	3.0	---	---
BbF:							
Biffle----------	7s	---	---	---	2.0	---	---
DeC2:							
Dellrose--------	3e	3.0	80.0	35.0	6.5	2,100.0	40.0
DeD2:							
Dellrose--------	6e	---	---	---	4.5	---	---
DkB:							
Dickson---------	2e	---	90.0	35.0	6.5	1,900.0	50.0
Eg:							
Egam------------	3w	---	65.0	35.0	7.0	---	---
GmC:							
Gladdice--------	6e	---	---	---	5.5	---	---
Mimosa----------	6e	---	---	---	4.5	---	---

Table 5.—Land capability and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Soybeans	Tall fescue-ladino	Tobacco	Wheat
		Tons	Bu	Bu	AUM	Lbs	Bu
GmE:							
Gladdice--------	7e	---	---	---	---	---	---
Mimosa----------	7e	---	---	---	---	---	---
Gu:							
Guthrie---------	5w	---	---	---	4.0	---	---
HaC2:							
Hampshire-------	3e	3.0	70.0	30.0	5.5	1,700.0	42.0
HaC3:							
Hampshire-------	4e	2.5	---	25.0	5.0	---	38.0
HaD3:							
Hampshire-------	6e	---	---	---	4.5	---	---
HgD:							
Hampshire-------	7s	---	---	---	---	---	---
Gullied land.							
HsF:							
Hawthorne-------	7s	---	---	---	---	---	---
Sulphura--------	7s	---	---	---	---	---	---
HuA:							
Humphreys-------	2w	---	80.0	35.0	6.5	2,300.0	40.0
HuB:							
Humphreys-------	2e	3.0	80.0	35.0	6.5	2,300.0	50.0
LaB:							
Lax-------------	2e	---	80.0	30.0	---	2,200.0	40.0
LaC:							
Lax-------------	3e	---	75.0	25.0	---	1,900.0	35.0
Ln:							
Lindside--------	3w	---	75.0	30.0	6.5	---	---
Lo:							
Lobelville------	2w	---	85.0	36.0	7.5	---	40.0
Me:							
Melvin----------	5w	---	---	---	6.5	---	---

Table 5.—Land capability and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Soybeans	Tall fescue-ladino	Tobacco	Wheat
		Tons	Bu	Bu	AUM	Lbs	Bu
MnD:							
Minvale---------	4e	---	70.0	---	5.5	1,900.0	35.0
MsD3:							
Minvale---------	6e	---	---	---	5.0	---	---
MtB:							
Mountview-------	2e	3.5	90.0	40.0	6.5	2,400.0	55.0
Nr:							
Norene----------	5w	---	---	---	6.5	---	---
PaB:							
Paden-----------	2e	---	80.0	30.0	6.5	1,900.0	35.0
PaC2:							
Paden-----------	3e	---	75.0	25.0	6.0	1,700.0	25.0
PkB:							
Pickwick--------	2e	4.0	100.0	40.0	7.5	2,800.0	55.0
PkC2:							
Pickwick--------	3e	3.7	85.0	34.0	7.0	2,600.0	48.0
PkC3:							
Pickwick--------	4e	3.0	65.0	26.0	6.0	2,000.0	42.0
Ra:							
Riverby---------	4s	---	50.0	---	4.0	---	---
SaD:							
Saffell---------	6e	---	---	---	4.0	---	---
SaF:							
Saffell---------	7e	---	---	---	---	---	---
SeC:							
Sengtown--------	3e	3.0	80.0	32.0	7.5	2,200.0	45.0
SeD2:							
Sengtown--------	4e	---	70.0	25.0	6.0	1,800.0	38.0
SeF:							
Sengtown--------	7e	---	---	---	5.0	---	---
SmC2:							
Sengtown--------	3e	---	85.0	30.0	6.0	2,000.0	42.0
Mountview-------	3e	---	80.0	30.0	6.0	2,200.0	45.0

Table 5.—Land capability and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn	Soybeans	Tall fescue-ladino	Tobacco	Wheat
		Tons	Bu	Bu	AUM	Lbs	Bu
SrF:							
Sengtown--------	7e	---	---	---	---	---	---
Rock outcrop.							
Su:							
Sullivan--------	2w	---	120.0	40.0	7.5	---	---
ThC2:							
Tarklin---------	3e	---	80.0	25.0	6.0	2,000.0	35.0
Humphreys-------	3e	---	80.0	32.0	6.0	2,150.0	48.0
TrA:							
Trace-----------	2w	4.0	110.0	45.0	8.5	---	40.0
TrB:							
Trace-----------	2e	4.0	115.0	45.0	8.5	2,800.0	45.0
Ua. Udarents							
Ud. Udarents							
W. Water							
Wm:							
Woodmont--------	3w	---	60.0	30.0	6.5	---	---

Table 6.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland)

Map symbol	Soil name
AmB	Armour silt loam, 2 to 5 percent slopes
An	Arrington silt loam, frequently flooded
DkB	Dickson silt loam, 2 to 5 percent slopes
Eg	Egam silt loam, frequently flooded
HuA	Humphreys gravelly silt loam, 0 to 2 percent slopes, occasionally flooded
HuB	Humphreys gravelly silt loam, 2 to 5 percent slopes
LaB	Lax silt loam, 2 to 5 percent slopes
Ln	Lindside silt loam, frequently flooded
Lo	Lobelville silt loam, occasionally flooded
MtB	Mountview silt loam, 2 to 5 percent slopes
PaB	Paden silt loam, 1 to 5 percent slopes
PkB	Pickwick silt loam, 2 to 5 percent slopes
Su	Sullivan silt loam, occasionally flooded
TrA	Trace silt loam, 0 to 2 percent slopes, occasionally flooded
TrB	Trace silt loam, 2 to 5 percent slopes, rarely flooded
Wm	Woodmont silt loam, rarely flooded

Table 7.—Woodland Management and Productivity

Map symbol and soil name	Management concerns					Potential productivity			Suggested trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume of wood fiber	
								m^3/ha	
AmB:									
Armour----------	Slight	Slight	Slight	Slight	Moderate	loblolly pine-------	80	7	Shumard's oak,
						northern red oak----	75	4	black walnut,
						white oak-----------	75	4	loblolly pine,
						yellow-poplar-------	95	6	white oak,
									yellow-poplar
AmC:									
Armour----------	Slight	Slight	Slight	Slight	Moderate	loblolly pine-------	77	7	Shumard's oak,
						northern red oak----	70	4	black walnut,
						white oak-----------	70	4	loblolly pine,
						yellow-poplar-------	90	6	white oak,
									yellow-poplar
AmC3:									
Armour----------	Slight	Slight	Slight	Slight	Moderate	loblolly pine-------	77	7	Shumard's oak,
						northern red oak----	70	4	black walnut,
						white oak-----------	70	4	loblolly pine,
						yellow-poplar-------	90	6	white oak,
									yellow-poplar
An:									
Arrington-------	Slight	Slight	Slight	Slight	Severe	black walnut--------	---	---	Shumard's oak,
						loblolly pine-------	90	9	black walnut,
						southern red oak----	80	4	loblolly pine,
						white oak-----------	80	4	yellow-poplar
						yellow-poplar-------	100	8	
BaF:									
Barfield--------	Severe	Severe	Moderate	Severe	Moderate	eastern redcedar----	35	3	Virginia pine,
									eastern
									redcedar
Rock outcrop.									
BbC:									
Biffle----------	Slight	Slight	Moderate	Moderate	Moderate	chestnut oak--------	55	3	loblolly pine,
						northern red oak----	55	4	shortleaf pine
						shortleaf pine------	55	8	
						southern red oak----	55	4	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Suggested trees to plant
								m^3/ha	
BbD:									
Biffle----------	Moderate	Moderate	Moderate	Moderate	Moderate	chestnut oak--------	60	3	loblolly pine,
						northern red oak----	60	4	shortleaf pine
						shortleaf pine------	60	8	
						southern red oak----	60	4	
BbF:									
Biffle----------	Severe	Severe	Moderate	Moderate	Moderate	chestnut oak--------	60	3	loblolly pine,
						northern red oak----	60	4	shortleaf pine
						shortleaf pine------	60	8	
						southern red oak----	60	4	
DeC2:									
Dellrose--------	Slight	Slight	Slight	Slight	Moderate	loblolly pine-------	90	9	black walnut,
						northern red oak----	76	4	loblolly pine,
						yellow-poplar-------	98	7	yellow-poplar
DeD2:									
Dellrose--------	Moderate	Moderate	Slight	Slight	Moderate	loblolly pine-------	90	9	black walnut,
						northern red oak----	76	4	loblolly pine,
						yellow-poplar-------	98	7	yellow-poplar
DkB:									
Dickson---------	Slight	Slight	Slight	Moderate	Moderate	loblolly pine-------	80	8	loblolly pine,
						shortleaf pine------	70	8	southern red
						white oak-----------	73	4	oak, white oak,
						yellow-poplar-------	92	6	yellow-poplar
Eg:									
Egam------------	Slight	Slight	Severe	Slight	Severe	loblolly pine-------	90	9	Shumard's oak,
						southern red oak----	80	4	black walnut,
						water oak-----------	90	6	loblolly pine,
						yellow-poplar-------	100	8	yellow-poplar
GmC:									
Gladdice--------	Slight	Slight	Slight	Slight	Moderate	eastern redcedar----	45	4	Virginia pine,
						loblolly pine-------	80	8	loblolly pine
						southern red oak----	65	3	
Mimosa----------	Slight	Slight	Slight	Slight	Moderate	eastern redcedar----	45	4	loblolly pine
						loblolly pine-------	80	8	
						southern red oak----	65	3	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns					Potential productivity			Suggested trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume of wood fiber	
								m^3/ha	
GmE:									
Gladdice--------	Moderate	Moderate	Slight	Slight	Moderate	eastern redcedar----	45	4	loblolly pine
						loblolly pine-------	80	8	
						southern red oak----	65	3	
Mimosa----------	Moderate	Moderate	Slight	Slight	Moderate	eastern redcedar----	45	4	loblolly pine
						loblolly pine-------	80	8	
						southern red oak----	65	3	
Gu:									
Guthrie---------	Slight	Severe	Severe	Moderate	Severe	sweetgum------------	90	7	green ash, sweetgum, willow oak
						willow oak----------	85	6	
HaC2:									
Hampshire-------	Moderate	Slight	Slight	Slight	Moderate	eastern redcedar----	50	4	loblolly pine, yellow-poplar
						loblolly pine-------	80	8	
						southern red oak----	70	4	
HaC3:									
Hampshire-------	Moderate	Slight	Slight	Slight	Moderate	eastern redcedar----	50	4	loblolly pine, yellow-poplar
						loblolly pine-------	80	8	
						southern red oak----	70	4	
HaD3:									
Hampshire-------	Severe	Moderate	Slight	Slight	Moderate	eastern redcedar----	50	4	loblolly pine, yellow-poplar
						loblolly pine-------	80	8	
						southern red oak----	70	4	
HgD:									
Hampshire-------	Severe	Moderate	Slight	Slight	Moderate	eastern redcedar----	50	4	loblolly pine, yellow-poplar
						loblolly pine-------	80	8	
						southern red oak----	70	4	
Gullied land.									
HsF:									
Hawthorne-------	Moderate	Severe	Moderate	Slight	Moderate	mockernut hickory---	---	---	loblolly pine, shortleaf pine
						shortleaf pine------	60	6	
						southern red oak----	60	3	
Sulphura--------	Severe	Severe	Moderate	Moderate	Moderate	eastern redcedar----	35	2	Virginia pine, eastern redcedar
						loblolly pine-------	65	6	
						shortleaf pine------	55	5	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
								m^3/ha	
HuA:									
Humphreys-------	Slight	Slight	Slight	Slight	Moderate	black walnut--------	---	---	black walnut,
						loblolly pine-------	90	9	loblolly pine,
						northern red oak----	70	4	yellow-poplar
						shortleaf pine------	70	8	
						yellow-poplar-------	100	8	
HuB:									
Humphreys-------	Slight	Slight	Slight	Slight	Severe	black walnut--------	---	---	black walnut,
						loblolly pine-------	90	9	loblolly pine,
						northern red oak----	70	4	yellow-poplar
						shortleaf pine------	70	8	
						yellow-poplar-------	100	8	
LaB:									
Lax-------------	Slight	Slight	Slight	Moderate	Moderate	loblolly pine-------	80	8	Virginia pine,
						southern red oak----	70	4	loblolly pine,
									southern red
									oak
LaC:									
Lax-------------	Moderate	Slight	Slight	Moderate	Moderate	loblolly pine-------	80	8	Virginia pine,
						southern red oak----	70	4	loblolly pine,
									southern red
									oak
Ln:									
Lindside--------	Slight	Slight	Slight	Slight	Severe	black walnut--------	---	---	Shumard's oak,
						northern red oak----	86	5	black walnut,
						red maple-----------	---	---	white ash,
						white ash-----------	85	4	white oak,
						white oak-----------	85	5	yellow-poplar
						yellow-poplar-------	95	7	
Lo:									
Lobelville------	Slight	Slight	Slight	Slight	Severe	black walnut--------	70	4	Shumard's oak,
						loblolly pine-------	90	9	black walnut,
						southern red oak----	76	4	yellow-poplar
						white oak-----------	70	4	
						yellow-poplar-------	94	7	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
								m3/ha	
Me:									
Melvin	Slight	Moderate	Moderate	Severe	Severe	American elm	---	---	Nuttall oak, baldcypress, eastern cottonwood, green ash, pin oak, sweetgum, willow oak
						cherrybark oak	91	8	
						common hackberry	---	---	
						eastern cottonwood	101	9	
						green ash	---	---	
						hickory	---	---	
						pin oak	99	7	
						red maple	---	---	
						sweetgum	89	7	
MnD:									
Minvale	Moderate	Moderate	Slight	Slight	Moderate	Virginia pine	70	8	black walnut, loblolly pine, yellow-poplar
						loblolly pine	80	8	
						shortleaf pine	70	8	
						white oak	70	4	
						yellow-poplar	90	6	
MsD3:									
Minvale	Moderate	Moderate	Slight	Slight	Moderate	Virginia pine	70	8	black walnut, loblolly pine, yellow-poplar
						loblolly pine	80	8	
						shortleaf pine	70	8	
						white oak	70	4	
						yellow-poplar	90	6	
MtB:									
Mountview	Slight	Moderate	Slight	Slight	Moderate	shortleaf pine	65	7	loblolly pine, shortleaf pine, southern red oak
						southern red oak	70	4	
						yellow-poplar	90	6	
Nr:									
Norene	Slight	Severe	Severe	Severe	Severe	American elm	---	---	Nuttall oak, baldcypress, green ash, pin oak, sweetgum
						American sycamore	---	---	
						common hackberry	---	---	
						eastern cottonwood	95	8	
						red maple	---	---	
						sweetgum	90	7	
						water oak	80	5	
PaB:									
Paden	Slight	Slight	Slight	Moderate	Moderate	loblolly pine	80	8	Shumard's oak, loblolly pine, sweetgum, white oak, yellow-poplar
						southern red oak	70	4	
						sweetgum	80	6	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Suggested trees to plant
								m3/ha	
PaC2:									
Paden	Moderate	Slight	Slight	Moderate	Moderate	loblolly pine	80	8	Shumard's oak,
						southern red oak	70	4	loblolly pine,
						sweetgum	80	6	sweetgum, white
									oak, yellow-
									poplar
PkB:									
Pickwick	Slight	Slight	Slight	Slight	Moderate	Virginia pine	70	8	Shumard's oak,
						loblolly pine	80	8	loblolly pine,
						shortleaf pine	70	8	shortleaf pine,
						southern red oak	70	4	yellow-poplar
						white oak	73	4	
						yellow-poplar	95	7	
PkC2:									
Pickwick	Moderate	Slight	Slight	Slight	Moderate	Virginia pine	70	8	Shumard's oak,
						loblolly pine	80	8	loblolly pine,
						shortleaf pine	70	8	shortleaf pine,
						southern red oak	70	4	yellow-poplar
						white oak	73	4	
						yellow-poplar	95	7	
PkC3:									
Pickwick	Moderate	Slight	Slight	Slight	Moderate	Virginia pine	70	8	loblolly pine,
						loblolly pine	80	8	shortleaf pine,
						shortleaf pine	70	8	southern red
						southern red oak	70	4	oak, yellow-
						white oak	73	4	poplar
						yellow-poplar	95	7	
Ra:									
Riverby	Slight	Slight	Severe	Slight	Moderate	American sycamore	98	8	Shumard's oak,
						common hackberry	---	---	black walnut,
						sweetgum	90	7	loblolly pine
SaD:									
Saffell	Moderate	Moderate	Slight	Slight	Moderate	loblolly pine	68	6	loblolly pine,
						shortleaf pine	60	6	shortleaf pine
						white oak	---	---	
SaF:									
Saffell	Severe	Severe	Slight	Slight	Moderate	loblolly pine	68	6	loblolly pine,
						shortleaf pine	60	6	shortleaf pine
						white oak	---	---	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Suggested trees to plant
								m^3/ha	
SeC:									
Sengtown	Slight	Slight	Slight	Slight	Moderate	shortleaf pine	70	8	loblolly pine,
						southern red oak	70	4	shortleaf pine
						yellow-poplar	90	6	
SeD2:									
Sengtown	Moderate	Moderate	Slight	Slight	Moderate	shortleaf pine	70	8	loblolly pine,
						southern red oak	70	4	shortleaf pine,
						yellow-poplar	90	6	yellow-poplar
SeF:									
Sengtown	Severe	Severe	Slight	Slight	Moderate	shortleaf pine	70	8	loblolly pine,
						southern red oak	70	4	shortleaf pine,
						yellow-poplar	90	6	yellow-poplar
SmC2:									
Sengtown	Slight	Slight	Slight	Slight	Moderate	shortleaf pine	70	8	loblolly pine,
						southern red oak	70	4	shortleaf pine
						yellow-poplar	90	6	
Mountview	Moderate	Moderate	Slight	Slight	Moderate	shortleaf pine	65	7	loblolly pine,
						southern red oak	70	4	shortleaf pine
						yellow-poplar	90	6	
SrF:									
Sengtown	Severe	Severe	Slight	Slight	Moderate	shortleaf pine	70	8	loblolly pine,
						southern red oak	70	4	shortleaf pine,
						yellow-poplar	90	6	yellow-poplar
Rock outcrop.									
Su:									
Sullivan	Slight	Slight	Moderate	Slight	Severe	Virginia pine	70	8	Shumard's oak,
						northern red oak	70	4	black walnut,
						shortleaf pine	70	8	loblolly pine,
						yellow-poplar	100	8	yellow-poplar
ThC2:									
Tarklin	Slight	Slight	Slight	Slight	Moderate	American beech	---	---	Shumard's oak,
						black oak	---	---	loblolly pine,
						eastern redcedar	---	---	shortleaf pine,
						shortleaf pine	65	7	white oak,
						sugar maple	---	---	yellow-poplar
						white oak	74	4	
						yellow-poplar	---	---	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
								m^3/ha	
ThC2:									
Humphreys	Slight	Slight	Slight	Slight	Moderate	black walnut	---	---	Shumard's oak, black walnut, loblolly pine, yellow-poplar
						loblolly pine	90	9	
						northern red oak	70	4	
						shortleaf pine	70	8	
						yellow-poplar	100	8	
TrA:									
Trace	Slight	Slight	Slight	Slight	Severe	Shumard's oak	75	4	Shumard's oak, black cherry, black walnut, loblolly pine, northern red oak, yellow-poplar
						loblolly pine	90	9	
						northern red oak	75	4	
						yellow-poplar	95	7	
TrB:									
Trace	Slight	Slight	Slight	Slight	Severe	Shumard's oak	75	4	Shumard's oak, black cherry, black walnut, loblolly pine, northern red oak, yellow-poplar
						loblolly pine	90	9	
						northern red oak	75	4	
						yellow-poplar	95	7	
Ua:									
Udarents	---	---	---	---	---	---	---	---	Virginia pine, loblolly pine, shortleaf pine
Ud:									
Udarents	---	---	---	---	---	---	---	---	Virginia pine, loblolly pine, shortleaf pine
W.									
Water									
Wm:									
Woodmont	Slight	Moderate	Slight	Slight	Moderate	loblolly pine	85	8	loblolly pine, willow oak, yellow-poplar
						shortleaf pine	60	6	
						sweetgum	80	6	
						willow oak	80	5	
						yellow-poplar	90	6	

Table 8.—Recreational Development

(The information in this report indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AmB:					
Armour----------	Slight	Slight	Moderate: Slope.	Slight	Slight
AmC:					
Armour----------	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
AmC3:					
Armour----------	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
An:					
Arrington-------	Severe: flooding	Moderate: flooding	Severe: flooding	Moderate: flooding	Severe: flooding
BaF:					
Barfield--------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock
Rock outcrop.					
BbC:					
Biffle----------	Severe: small stones	Severe: small stones	Severe: slope	Slight	Severe: small stones
BbD:					
Biffle----------	Severe: slope small stones	Severe: slope small stones	Severe: slope small stones	Moderate: slope	Severe: slope small stones
BbF:					
Biffle----------	Severe: slope small stones	Severe: slope small stones	Severe: slope small stones	Severe: slope	Severe: slope small stones
DeC2:					
Dellrose--------	Moderate: slope small stones	Moderate: slope small stones	Severe: slope small stones	Slight	Moderate: large stones slope
DeD2:					
Dellrose--------	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
DkB:					
Dickson	Moderate: percs slowly wetness	Moderate: percs slowly wetness	Moderate: percs slowly slope	Severe: erodes easily	Slight
Eg:					
Egam	Severe: flooding	Moderate: flooding	Severe: flooding	Moderate: flooding	Severe: flooding
GmC:					
Gladdice	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Slight	Moderate: large stones slope
Mimosa	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Slight	Moderate: slope
GmE:					
Gladdice	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
Mimosa	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Gu:					
Guthrie	Severe: ponding	Severe: ponding	Severe: ponding	Severe: ponding	Severe: ponding
HaC2:					
Hampshire	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Severe: erodes easily	Moderate: slope
HaC3:					
Hampshire	Moderate: percs slowly slope	Moderate: percs slowly slope	Severe: slope	Slight	Moderate: slope
HaD3:					
Hampshire	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
HgD:					
Hampshire	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
Gullied land.					

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
HsF:					
Hawthorne-------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Sulphura--------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
HuA:					
Humphreys-------	Severe: flooding poor filter	Moderate: small stones	Severe: small stones	Slight	Moderate: flooding small stones
HuB:					
Humphreys-------	Moderate: small stones	Moderate: small stones	Severe: small stones	Slight	Moderate: small stones
LaB:					
Lax-------------	Moderate: percs slowly wetness	Moderate: percs slowly wetness	Moderate: slope small stones	Severe: erodes easily	Moderate: wetness
LaC:					
Lax-------------	Moderate: percs slowly slope wetness	Moderate: percs slowly slope wetness	Severe: slope	Severe: erodes easily	Moderate: slope wetness
Ln:					
Lindside--------	Severe: flooding	Moderate: flooding	Severe: flooding	Moderate: flooding	Severe: flooding
Lo:					
Lobelville------	Severe: flooding	Moderate: wetness	Moderate: flooding	Slight	Moderate: flooding
Me:					
Melvin----------	Severe: flooding wetness	Severe: wetness	Severe: flooding wetness	Severe: wetness	Severe: flooding wetness
MnD:					
Minvale---------	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
MsD3:					
Minvale---------	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MtB:					
Mountview-------	Slight	Slight	Moderate: slope	Severe: erodes easily	Slight
Nr:					
Norene----------	Severe: flooding ponding	Severe: ponding	Severe: flooding ponding	Severe: ponding	Severe: flooding ponding
PaB:					
Paden-----------	Moderate: percs slowly wetness	Moderate: percs slowly wetness	Moderate: percs slowly slope	Moderate: wetness	Moderate: wetness
PaC2:					
Paden-----------	Moderate: percs slowly slope wetness	Moderate: percs slowly slope wetness	Severe: slope	Severe: erodes easily	Moderate: slope wetness
PkB:					
Pickwick--------	Slight	Slight	Moderate: slope	Slight	Slight
PkC2:					
Pickwick--------	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
PkC3:					
Pickwick--------	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
Ra:					
Riverby---------	Severe: flooding small stones	Severe: small stones	Severe: flooding small stones	Moderate: flooding	Severe: flooding small stones
SaD:					
Saffell---------	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
SaF:					
Saffell---------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
SeC:					
Sengtown--------	Moderate: slope small stones	Moderate: slope small stones	Severe: slope small stones	Slight	Moderate: slope small stones

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
SeD2:					
Sengtown	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
SeF:					
Sengtown	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
SmC2:					
Sengtown	Moderate: slope small stones	Moderate: slope small stones	Severe: slope small stones	Slight	Moderate: slope small stones
Mountview	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
SrF:					
Sengtown	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Rock outcrop.					
Su:					
Sullivan	Severe: flooding	Slight	Moderate: flooding	Slight	Moderate: flooding
ThC2:					
Tarklin	Moderate: slope small stones	Moderate: slope small stones	Severe: slope small stones	Moderate: wetness	Moderate: large stones small stones
Humphreys	Moderate: slope small stones	Moderate: slope small stones	Severe: slope small stones	Slight	Moderate: small stones droughty
TrA:					
Trace	Severe: flooding	Slight	Moderate: flooding	Slight	Moderate: flooding
TrB:					
Trace	Severe: flooding	Slight	Moderate: slope	Slight	Slight
Ua.					
Udarents					
Ud.					
Udarents					

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
W.					
Water					
Wm:					
Woodmont--------	Severe: flooding wetness	Moderate: percs slowly wetness	Severe: wetness	Moderate: wetness	Moderate: wetness

Table 9.—Wildlife Habitat

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
AmB:										
Armour----------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
AmC:										
Armour----------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
AmC3:										
Armour----------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
An:										
Arrington-------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
BaF:										
Barfield--------	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Rock outcrop.										
BbC:										
Biffle----------	Fair	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
BbD:										
Biffle----------	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
BbF:										
Biffle----------	Very poor	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Poor	Very poor
DeC2:										
Dellrose--------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
DeD2:										
Dellrose--------	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
DkB:										
Dickson---------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Eg:										
Egam------------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
GmC:										
Gladdice--------	Fair	Good	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Mimosa----------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
GmE:										
Gladdice--------	Poor	Fair	Fair	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Mimosa----------	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Gu:										
Guthrie---------	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
HaC2:										
Hampshire-------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
HaC3:										
Hampshire-------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
HaD3:										
Hampshire-------	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
HgD:										
Hampshire-------	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Gullied land.										
HsF:										
Hawthorne-------	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Sulphura--------	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
HuA:										
Humphreys-------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
HuB:										
Humphreys-------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LaB:										
Lax-------------	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LaC:										
Lax-------------	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Ln:										
Lindside--------	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor
Lo:										
Lobelville------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Me:										
Melvin	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
MnD:										
Minvale	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
MsD3:										
Minvale	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
MtB:										
Mountview	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Poor
Nr:										
Norene	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Good	Very poor	Very poor	Good
PaB:										
Paden	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
PaC2:										
Paden	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
PkB:										
Pickwick	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
PkC2:										
Pickwick	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
PkC3:										
Pickwick	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Ra:										
Riverby	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
SaD:										
Saffell	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
SaF:										
Saffell	Very poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
SeC:										
Sengtown	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SeD2:										
Sengtown	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SeF:										
Sengtown	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
SmC2:										
Sengtown	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Mountview	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Poor
SrF:										
Sengtown	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Rock outcrop.										
Su:										
Sullivan	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
ThC2:										
Tarklin	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Humphreys	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
TrA:										
Trace	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
TrB:										
Trace	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Ua. Udarents										
Ud. Udarents										
W. Water										
Wm:										
Woodmont	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair

Table 10.—Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AmB:						
Armour----------	Slight	Slight	Slight	Slight	Severe: low strength	Slight
AmC:						
Armour----------	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Severe: low strength	Moderate: slope
AmC3:						
Armour----------	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Severe: low strength	Moderate: slope
An:						
Arrington-------	Moderate: flooding wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding
BaF:						
Barfield--------	Severe: slope depth to rock	Severe: shrink-swell slope	Severe: shrink-swell slope	Severe: shrink-swell slope	Severe: low strength shrink-swell	Severe: slope depth to rock
Rock outcrop.						
BbC:						
Biffle----------	Moderate: slope depth to rock	Moderate: slope	Moderate: slope depth to rock	Severe: slope	Moderate: slope	Severe: small stones
BbD:						
Biffle----------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
BbF:						
Biffle----------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
DeC2:						
Dellrose--------	Moderate: slope slippage	Moderate: slope slippage	Moderate: slope slippage	Severe: slope slippage	Moderate: slope slippage	Moderate: large stones slope
DeD2:						
Dellrose--------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
DkB:						
Dickson	Severe: wetness	Moderate: wetness	Severe: wetness	Moderate: wetness	Severe: low strength	Slight
Eg:						
Egam	Moderate: flooding too clayey wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding low strength	Severe: flooding
GmC:						
Gladdice	Severe: depth to rock	Severe: shrink-swell	Severe: shrink-swell	Severe: shrink-swell	Severe: low strength	Moderate: large stones
Mimosa	Moderate: slope too clayey depth to rock	Moderate: shrink-swell slope	Moderate: shrink-swell slope depth to rock	Severe: slope	Severe: low strength	Moderate: slope
GmE:						
Gladdice	Severe: slope depth to rock	Severe: shrink-swell slope	Severe: shrink-swell slope	Severe: shrink-swell slope	Severe: low strength shrink-swell	Severe: slope
Mimosa	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength	Severe: slope
Gu:						
Guthrie	Severe: ponding	Severe: ponding	Severe: ponding	Severe: ponding	Severe: low strength	Severe: ponding
HaC2:						
Hampshire	Moderate: slope too clayey	Moderate: shrink-swell slope	Moderate: shrink-swell slope	Severe: slope	Severe: low strength	Moderate: slope
HaC3:						
Hampshire	Moderate: slope too clayey	Moderate: shrink-swell slope	Moderate: shrink-swell slope	Severe: slope	Severe: low strength	Moderate: slope
HaD3:						
Hampshire	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength	Severe: slope
HgD:						
Hampshire	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength	Severe: slope
Gullied land.						

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
HsF:						
Hawthorne-------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Sulphura--------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope	Severe: slope
HuA:						
Humphreys-------	Moderate: flooding wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding small stones
HuB:						
Humphreys-------	Slight	Slight	Moderate: wetness	Slight	Slight	Moderate: small stones
LaB:						
Lax-------------	Severe: wetness	Moderate: wetness	Severe: wetness	Moderate: wetness	Severe: low strength	Moderate: wetness
LaC:						
Lax-------------	Severe: wetness	Moderate: slope	Severe: wetness	Severe: slope	Severe: low strength	Moderate: slope
Ln:						
Lindside--------	Severe: wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding
Lo:						
Lobelville------	Severe: wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding
Me:						
Melvin----------	Severe: wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding
MnD:						
Minvale---------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
MsD3:						
Minvale---------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
MtB:						
Mountview-------	Moderate: too clayey	Slight	Moderate: shrink-swell	Slight	Severe: low strength	Slight

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Nr:						
Norene----------	Severe: ponding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding
PaB:						
Paden-----------	Severe: wetness	Moderate: wetness	Severe: wetness	Moderate: wetness	Severe: low strength	Moderate: wetness
PaC2:						
Paden-----------	Severe: wetness	Moderate: slope	Severe: wetness	Severe: slope	Severe: low strength	Moderate: slope
PkB:						
Pickwick--------	Slight	Slight	Slight	Slight	Severe: low strength	Slight
PkC2:						
Pickwick--------	Moderate: slope	Moderate: slope	Moderate: slope	Moderate: slope	Severe: low strength	Moderate: slope
PkC3:						
Pickwick--------	Moderate: slope	Moderate: slope	Moderate: slope	Moderate: slope	Severe: low strength	Moderate: slope
Ra:						
Riverby---------	Severe: cutbanks cave	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding
SaD:						
Saffell---------	Severe: slope cutbanks cave	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
SaF:						
Saffell---------	Severe: slope cutbanks cave	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
SeC:						
Sengtown--------	Moderate: slope too clayey	Moderate: shrink-swell slope	Moderate: shrink-swell slope	Severe: slope	Severe: low strength	Moderate: slope small stones
SeD2:						
Sengtown--------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength	Severe: slope
SeF:						
Sengtown--------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength	Severe: slope

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
SmC2:						
Sengtown	Moderate: slope too clayey	Moderate: shrink-swell slope	Moderate: shrink-swell slope	Severe: slope	Severe: low strength	Moderate: slope small stones
Mountview	Moderate: slope too clayey	Moderate: slope	Moderate: shrink-swell slope	Severe: slope	Severe: low strength	Moderate: slope
SrF:						
Sengtown	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength	Severe: slope
Rock outcrop.						
Su:						
Sullivan	Moderate: flooding wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding
ThC2:						
Tarklin	Severe: wetness	Moderate: slope	Severe: wetness	Severe: slope	Moderate: slope	Moderate: large stones
Humphreys	Moderate: slope wetness	Moderate: slope	Moderate: slope wetness	Severe: slope	Moderate: slope	Moderate: small stones droughty
TrA:						
Trace	Moderate: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding
TrB:						
Trace	Slight	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Slight
Ua. Udarents						
Ud. Udarents						
W. Water						
Wm:						
Woodmont	Severe: wetness	Severe: flooding	Severe: flooding	Severe: flooding	Severe: low strength	Moderate: wetness

Table 11.—Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AmB:					
Armour----------	Moderate: percs slowly	Moderate: seepage	Moderate: too clayey	Slight	Fair: thin layer
AmC:					
Armour----------	Moderate: percs slowly slope	Severe: slope	Moderate: slope too clayey	Moderate: slope	Fair: slope thin layer
AmC3:					
Armour----------	Moderate: percs slowly slope	Severe: slope	Moderate: slope too clayey	Moderate: slope	Fair: slope thin layer
An:					
Arrington-------	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Good
BaF:					
Barfield--------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey	Severe: slope depth to rock	Poor: hard to pack too clayey
Rock outcrop.					
BbC:					
Biffle----------	Severe: depth to rock	Severe: seepage	Severe: seepage	Severe: seepage	Poor: depth to rock
BbD:					
Biffle----------	Severe: slope depth to rock	Severe: seepage slope	Severe: seepage slope	Severe: seepage slope	Poor: slope depth to rock
BbF:					
Biffle----------	Severe: slope depth to rock	Severe: seepage slope	Severe: seepage slope	Severe: seepage slope	Poor: slope depth to rock
DeC2:					
Dellrose--------	Moderate: percs slowly slope	Severe: seepage slope	Moderate: slope too clayey	Severe: seepage	Poor: small stones
DeD2:					
Dellrose--------	Severe: slope	Severe: seepage	Severe: slope	Severe: seepage	Poor: slope
DkB:					
Dickson---------	Severe: percs slowly wetness	Severe: wetness	Moderate: too clayey wetness	Moderate: wetness	Fair: too clayey wetness
Eg:					
Egam------------	Severe: flooding percs slowly wetness	Severe: flooding wetness	Severe: flooding too clayey wetness	Severe: flooding wetness	Poor: hard to pack too clayey

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
GmC:					
Gladdice	Severe: percs slowly depth to rock	Severe: slope depth to rock	Severe: too clayey depth to rock	Severe: depth to rock	Poor: hard to pack too clayey
Mimosa	Severe: percs slowly	Severe: slope	Severe: too clayey	Moderate: slope	Poor: hard to pack
GmE:					
Gladdice	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: hard to pack too clayey depth to rock
Mimosa	Severe: percs slowly slope	Severe: slope	Severe: slope too clayey	Severe: slope	Poor: hard to pack slope
Gu:					
Guthrie	Severe: percs slowly ponding	Severe: ponding	Severe: ponding	Severe: ponding	Poor: ponding
HaC2:					
Hampshire	Severe: percs slowly	Severe: slope	Severe: too clayey	Moderate: slope	Poor: hard to pack
HaC3:					
Hampshire	Severe: percs slowly	Severe: slope	Severe: too clayey	Moderate: slope	Poor: hard to pack
HaD3:					
Hampshire	Severe: percs slowly slope	Severe: slope	Severe: slope too clayey	Severe: slope	Poor: hard to pack slope
HgD:					
Hampshire	Severe: percs slowly slope	Severe: slope	Severe: slope too clayey	Severe: slope	Poor: hard to pack slope
Gullied land.					
HsF:					
Hawthorne	Severe: slope depth to rock	Severe: seepage slope	Severe: seepage slope	Severe: seepage slope	Poor: slope small stones
Sulphura	Severe: slope depth to rock	Severe: seepage slope	Severe: seepage slope	Severe: seepage slope	Poor: slope small stones
HuA:					
Humphreys	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Poor: small stones
HuB:					
Humphreys	Severe: poor filter	Severe: seepage	Severe: seepage	Severe: seepage	Fair: small stones

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LaB:					
Lax-------------	Severe: percs slowly wetness	Severe: seepage wetness	Severe: seepage too clayey	Severe: seepage	Poor: hard to pack small stones
LaC:					
Lax-------------	Severe: percs slowly wetness	Severe: seepage slope	Severe: seepage too clayey	Severe: seepage	Poor: hard to pack small stones
Ln:					
Lindside--------	Severe: flooding percs slowly wetness	Severe: flooding seepage wetness	Severe: flooding seepage wetness	Severe: flooding wetness	Fair: too clayey wetness
Lo:					
Lobelville------	Severe: flooding wetness	Severe: flooding seepage	Severe: flooding seepage	Severe: flooding seepage	Poor: small stones
Me:					
Melvin----------	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Severe: flooding wetness	Poor: wetness
MnD:					
Minvale---------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: slope
MsD3:					
Minvale---------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: slope
MtB:					
Mountview-------	Moderate: percs slowly	Moderate: seepage	Severe: too clayey	Slight	Poor: hard to pack
Nr:					
Norene----------	Severe: flooding ponding	Severe: flooding ponding	Severe: flooding ponding	Severe: flooding ponding	Poor: ponding
PaB:					
Paden-----------	Severe: percs slowly wetness	Severe: wetness	Severe: wetness	Moderate: wetness	Fair: too clayey wetness
PaC2:					
Paden-----------	Severe: percs slowly wetness	Severe: slope wetness	Severe: wetness	Moderate: slope wetness	Fair: slope too clayey
PkB:					
Pickwick--------	Moderate: percs slowly	Moderate: seepage	Moderate: too clayey	Slight	Fair: too clayey
PkC2:					
Pickwick--------	Moderate: percs slowly slope	Severe: slope	Moderate: slope too clayey	Moderate: slope	Fair: slope too clayey

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PkC3:					
Pickwick--------	Moderate: percs slowly slope	Severe: slope	Moderate: slope too clayey	Moderate: slope	Fair: slope too clayey
Ra:					
Riverby---------	Severe: flooding poor filter	Severe: flooding seepage	Severe: flooding seepage	Severe: flooding seepage	Poor: seepage small stones
SaD:					
Saffell---------	Severe: slope	Severe: seepage	Severe: seepage	Severe: slope	Poor: slope
SaF:					
Saffell---------	Severe: slope	Severe: seepage	Severe: seepage	Severe: slope	Poor: slope
SeC:					
Sengtown--------	Moderate: percs slowly slope	Severe: slope	Severe: too clayey	Moderate: slope	Poor: hard to pack small stones
SeD2:					
Sengtown--------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: hard to pack
SeF:					
Sengtown--------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: hard to pack
SmC2:					
Sengtown--------	Moderate: percs slowly slope	Severe: slope	Severe: too clayey	Moderate: slope	Poor: hard to pack small stones
Mountview-------	Moderate: percs slowly slope	Severe: slope	Severe: too clayey	Moderate: slope	Poor: hard to pack small stones
SrF:					
Sengtown--------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Poor: hard to pack
Rock outcrop.					
Su:					
Sullivan--------	Severe: flooding	Severe: flooding	Severe: flooding	Severe: flooding	Good
ThC2:					
Tarklin---------	Severe: percs slowly wetness	Severe: seepage slope	Severe: seepage wetness	Moderate: slope wetness	Poor: small stones
Humphreys-------	Moderate: slope wetness	Severe: seepage slope	Severe: seepage wetness	Severe: seepage	Poor: small stones

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
TrA:					
Trace-----------	Severe: flooding poor filter	Severe: flooding seepage	Severe: flooding seepage	Severe: flooding seepage	Fair: thin layer too clayey
TrB:					
Trace-----------	Moderate: flooding poor filter	Severe: seepage	Severe: seepage	Severe: seepage	Fair: thin layer too clayey
Ua.					
Udarents					
Ud.					
Udarents					
W.					
Water					
Wm:					
Woodmont--------	Severe: percs slowly wetness	Slight	Severe: wetness	Severe: wetness	Poor: wetness

Table 12.—Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AmB:				
Armour----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: small stones
AmC:				
Armour----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: slope
AmC3:				
Armour----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: slope
An:				
Arrington-------	Fair: low strength	Improbable: excess fines	Improbable: excess fines	Good
BaF:				
Barfield--------	Poor: low strength shrink-swell depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: small stones too clayey depth to rock
Rock outcrop.				
BbC:				
Biffle----------	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones
BbD:				
Biffle----------	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones
BbF:				
Biffle----------	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones
DeC2:				
Dellrose--------	Fair: thin layer	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
DeD2:				
Dellrose--------	Fair: slope thin layer	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope
DkB:				
Dickson---------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim
Eg:				
Egam------------	Fair: low strength	Improbable: excess fines	Improbable: excess fines	Fair: thin layer
GmC:				
Gladdice--------	Poor: low strength shrink-swell depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: too clayey

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
GmC:				
Mimosa----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: too clayey
GmE:				
Gladdice--------	Poor: low strength shrink-swell depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope too clayey
Mimosa----------	Poor: low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: slope too clayey
Gu:				
Guthrie---------	Poor: low strength wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
HaC2:				
Hampshire-------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
HaC3:				
Hampshire-------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
HaD3:				
Hampshire-------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
HgD:				
Hampshire-------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
Gullied land.				
HsF:				
Hawthorne-------	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
Sulphura--------	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
HuA:				
Humphreys-------	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones
HuB:				
Humphreys-------	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones
LaB:				
Lax-------------	Fair: shrink-swell wetness	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones
LaC:				
Lax-------------	Fair: shrink-swell wetness	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Ln:				
Lindside--------	Fair: wetness	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim
Lo:				
Lobelville------	Fair: wetness	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
Me:				
Melvin----------	Poor: low strength wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
MnD:				
Minvale---------	Fair: low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope
MsD3:				
Minvale---------	Fair: low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope
MtB:				
Mountview-------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
Nr:				
Norene----------	Poor: low strength wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
PaB:				
Paden-----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim
PaC2:				
Paden-----------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim
PkB:				
Pickwick--------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
PkC2:				
Pickwick--------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: slope
PkC3:				
Pickwick--------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: slope
Ra:				
Riverby---------	Fair: large stones	Probable	Probable	Poor: area reclaim
SaD:				
Saffell---------	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
SaF:				
Saffell---------	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
SeC:				
Sengtown--------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
SeD2:				
Sengtown--------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
SeF:				
Sengtown--------	Poor: low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones
SmC2:				
Sengtown--------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
Mountview-------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
SrF:				
Sengtown--------	Poor: low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones
Rock outcrop.				
Su:				
Sullivan--------	Fair: low strength	Improbable: excess fines	Improbable: excess fines	Fair: small stones
ThC2:				
Tarklin---------	Fair: wetness	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim
Humphreys-------	Good	Improbable: excess fines	Improbable: excess fines	Poor: small stones
TrA:				
Trace-----------	Good	Improbable: excess fines	Probable	Poor: small stones
TrB:				
Trace-----------	Good	Improbable: excess fines	Probable	Poor: small stones
Ua. Udarents				
Ud. Udarents				
W. Water				
Wm:				
Woodmont--------	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: area reclaim

Table 13.—Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AmB:							
Armour----------	Moderate: seepage.	Moderate: piping.	Moderate: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
AmC:							
Armour----------	Moderate: seepage.	Moderate: piping.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
AmC3:							
Armour----------	Severe: slope.	Moderate: piping.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
An:							
Arrington-------	Moderate: seepage.	Severe: piping.	Moderate: slow refill.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
BaF:							
Barfield--------	Severe: slope, depth to rock.	Severe: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: slope, droughty.	Limitation: slope, droughty.	Limitation: slope, depth to rock.
AmC3:							
Armour----------	Severe: slope.	Moderate: piping.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
Rock outcrop.							
BbC:							
Biffle----------	Severe: seepage, slope.	Severe: thin layer.	Severe: no water.	Limitation: deep to water.	Limitation: slope, depth to rock.	Limitation: slope, depth to rock.	Limitation: slope, depth to rock.
BbD:							
Biffle----------	Severe: seepage, slope.	Severe: thin layer.	Severe: no water	Limitation: deep to water.	Limitation: slope, depth to rock.	Limitation: slope, depth to rock.	Limitation: slope, depth to rock.
BbF:							
Biffle----------	Severe: seepage, slope.	Severe: thin layer.	Severe: no water	Limitation: deep to water.	Limitation: slope, depth to rock.	Limitation: slope, depth to rock.	Limitation: slope, depth to rock.
DeC2:							
Dellrose--------	Severe: seepage.	Severe: piping.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.

Table 13.—Water Management—Continued

Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
DeD2:							
Dellrose	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.
DkB:							
Dickson	Slight	Severe: piping.	Severe: no water.	Limitation: percs slowly.	Limitation: wetness, percs slowly.	Limitation: erodes easily, percs slowly.	Limitation: erodes easily, rooting depth.
Eg:							
Egam	Slight	Moderate: thin layer, hard to pack, wetness.	Severe: slow refill.	Limitation: flooding.	Limitation: flooding.	Limitation: flooding.	Limitation: flooding.
GmC:							
Gladdice	Severe: slope.	Severe: hard to pack.	Severe: no water	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.
Mimosa	Severe: slope.	Severe: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: percs slowly.	Limitation: erodes easily.	Limitation: erodes easily.
GmE:							
Gladdice	Severe: slope.	Severe: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.
Mimosa	Severe: slope.	Severe: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: percs slowly.	Limitation: erodes easily.	Limitation: erodes easily.
Gu:							
Guthrie	Slight	Severe: piping, ponding.	Slight	Limitation: percs slowly.	Limitation: ponding, percs slowly.	Limitation: erodes easily, ponding.	Limitation: wetness, erodes easily.
HaC2:							
Hampshire	Moderate: depth to rock.	Severe: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
HaC3:							
Hampshire	Moderate: depth to rock.	Severe: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.
HaD3:							
Hampshire	Severe: slope.	Severe: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.

Table 13.—Water Management—Continued

Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
HgD:							
Hampshire	Severe: slope.	Severe: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.
Gullied land.							
HsF:							
Hawthorne	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Limitation: deep to water.	Limitation: slope, depth to rock.	Limitation: slope, depth to rock.	Limitation: slope. depth to rock.
Sulphura	Severe: seepage, slope.	Severe: thin layer.	Severe: no water.	Limitation: deep to water.	Limitation: slope, depth to rock.	Limitation: large stones, slope.	Limitation: large stones, slope.
HuA:							
Humphreys	Severe: seepage.	Moderate: piping.	Severe: no water.	Limitation: deep to water.	Limitation: flooding.	Favorable	Limitation: droughty.
HuB:							
Humphreys	Severe: seepage.	Moderate: piping.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Favorable	Favorable.
LaB:							
Lax	Moderate: seepage.	Moderate: hard to pack.	Severe: no water.	Limitation: percs slowly.	Limitation: percs slowly.	Limitation: erodes easily.	Limitation: erodes easily.
LaC:							
Lax	Moderate: seepage.	Moderate: hard to pack.	Severe: no water.	Limitation: percs slowly.	Limitation: percs slowly.	Limitation: erodes easily.	Limitation: erodes easily.
Ln:							
Lindside	Moderate: seepage.	Severe: piping.	Moderate: slow refill.	Limitation: flooding.	Limitation: flooding.	Limitation: erodes easily.	Limitation: erodes easily.
LoB:							
Lobellville	Severe: seepage.	Severe: seepage.	Moderate: slow refill.	Limitation: flooding.	Limitation: flooding.	Limitation: wetness.	Favorable.
Me:							
Melvin	Moderate: seepage.	Severe: piping.	Moderate: slow refill.	Limitation: flooding.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
MnD:							
Minvale	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.

Table 13.—Water Management—Continued

Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
MeD3:							
Minvale	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.
MtB:							
Mountview	Moderate: seepage.	Severe: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
Nr:							
Norene	Slight	Severe: ponding, thin layer.	Moderate: slow refill.	Limitation: ponding.	Limitation: ponding.	Limitation: ponding, erodes easily.	Limitation: wetness, erodes easily.
PaB:							
Paden	Moderate: seepage.	Severe: piping.	Severe: no water.	Limitation: percs slowly.	Limitation: percs slowly.	Limitation: erodes easily.	Limitation: erodes easily.
PaC3:							
Paden	Moderate: seepage.	Severe: piping.	Severe: no water.	Limitation: percs slowly.	Limitation: percs slowly.	Limitation: erodes easily.	Limitation: erodes easily.
PkB:							
Pickwick	Moderate: seepage.	Moderate: piping.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
PkC2:							
Mountview	Moderate: seepage.	Moderate: piping.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
PkC3:							
Pickwick	Moderate: seepage.	Moderate: piping.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
Ra:							
Riverby	Severe: seepage.	Severe: large stones.	Severe: cutbanks cave.	Limitation: deep to water.	Limitation: large stones.	Limitation: large stones.	Limitation: large stones.
SaD:							
Saffell	Severe: seepage, slope.	Moderate: thin layer.	Severe: no water.	Limitation: deep to water.	Limitation: slope, soil blowing.	Limitation: slope, soil blowing.	Limitation: slope, droughty.
SaF:							
Saffell	Severe: seepage, slope.	Moderate: thin layer.	Severe: no water.	Limitation: deep to water.	Limitation: slope, soil blowing.	Limitation: slope, soil blowing.	Limitation:. slope, droughty.

Table 13.—Water Management—Continued

Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
SeC:							
Sengtown	Moderate: seepage.	Moderate: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.
SeD2:							
Saffell	Moderate: seepage, slope.	Moderate: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.
SeF:							
Sengtown	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.
SmC2:							
Sengtown	Moderate: seepage.	Moderate: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation:. slope.
Mountview	Moderate: seepage.	Severe: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation:. erodes easily.
SrF:							
Sengtown	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Limitation: deep to water.	Limitation: slope.	Limitation: slope.	Limitation: slope.
Rock outcrop.							
Su:							
Sullivan	Severe: seepage.	Severe: piping.	Moderate: slow refill.	Limitation: deep to water.	Limitation: flooding.	Favorable	Favorable.
ThC2:							
Tarklin	Moderate: slope.	Severe: piping.	Severe: no water.	Limitation: percs slowly.	Limitation: slope.	Limitation: rooting depth.	Limitation: rooting depth.
Humphreys	Severe: seepage.	Moderate: piping.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
TrA:							
Trace	Severe: seepage.	Severe: piping.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
TrB:							
Trace	Severe: seepage.	Severe: piping.	Severe: no water.	Limitation: deep to water.	Limitation: erodes easily.	Limitation: erodes easily.	Limitation: erodes easily.
Ua.							
Udarents							

Table 13.—Water Management—Continued

Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Ud. Udarents							
Wm: Woodmont--------	Slight---------	Moderate: piping, wetness.	Severe: no water.	Limitation: percs slowly.	Limitation: wetness, percs slowly.	Limitation: wetness, erodes easily.	Limitation: wetness, erodes easily.

Table 14.—Engineering Index Properties

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
AmB:												
Armour----------	0-8	silt loam	CL, CL-ML, ML	A-4	0	0	90-100	80-100	75-95	70-90	25-35	5-10
	8-87	silty clay loam, silt loam, clay loam	CL	A-4, A-6	0	0	90-100	80-100	75-95	70-95	30-40	8-18
AmC:												
Armour----------	0-8	silt loam	CL, CL-ML, ML	A-4	0	0	90-100	80-100	75-95	70-90	25-35	5-10
	8-87	silty clay loam, silt loam, clay loam	CL	A-4, A-6	0	0	90-100	80-100	75-95	70-95	30-40	8-18
AmC3:												
Armour----------	0-6	silty clay loam	CL	A-6	0	0	90-100	80-100	75-100	70-95	32-40	11-18
	6-60	silty clay loam, silt loam, clay loam	CL	A-4, A-6	0	0	90-100	80-100	75-95	70-95	30-40	8-18
An:												
Arrington-------	0-10	silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	90-100	85-95	75-95	25-40	4-15
	10-60	silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-100	75-95	25-40	4-15
BaF:												
Barfield--------	0-7	silty clay loam	CH, CL, MH	A-6, A-7	0-5	0-10	90-100	85-95	80-90	75-85	35-65	12-35
	7-16	clay, silty clay loam, flaggy clay	CH, CL, MH	A-6, A-7	0-5	0-15	70-100	65-90	60-85	55-80	35-70	14-40
	16-20	unweathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop.												
BbC:												
Biffle----------	0-11	gravelly silt loam	CL, CL-ML, GC, GC-GM	A-1, A-2, A-4	0	0-5	50-90	40-80	37-70	20-60	20-28	3-9
	11-32	gravelly silt loam, gravelly silty clay loam	CL, CL-ML, GC, GC-GM	A-4, A-6	0	0-5	50-75	50-75	40-70	36-65	20-32	5-12
	32-60	weathered bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
BbD:												
Biffle----------	0-11	gravelly silt loam	CL, CL-ML, GC, GC-GM	A-1, A-2, A-4	0	0-5	50-90	40-80	37-70	20-60	20-28	3-9
	11-32	gravelly silt loam, gravelly silty clay loam	CL, CL-ML, GC, GC-GM	A-4, A-6	0	0-5	50-75	50-75	40-70	36-65	20-32	5-12
	32-60	weathered bedrock			---	---	---	---	---	---	---	---
BbF:												
Biffle----------	0-11	gravelly silt loam	CL, CL-ML, GC, GC-GM	A-1, A-2, A-4	0	0-5	50-90	40-80	37-70	20-60	20-28	3-9
	11-32	gravelly silt loam, gravelly silty clay loam	CL, CL-ML, GC, GC-GM	A-4, A-6	0	0-5	50-75	50-75	40-70	36-65	20-32	5-12
	32-60	weathered bedrock			---	---	---	---	---	---	---	---
DeC2:												
Dellrose--------	0-11	gravelly silt loam	CL, CL-ML, GC, SC	A-4, A-6	0	0-10	55-90	55-85	45-75	40-70	20-35	5-15
	11-35	gravelly silty clay loam, gravelly silt loam	CL, GC, ML, SC	A-4, A-6, A-7	0	0-15	60-90	55-90	50-75	40-70	30-45	8-18
	35-60	clay, silty clay	CH, MH	A-7	0	0-10	80-100	80-100	75-90	70-85	50-70	20-35
DeD2:												
Dellrose--------	0-11	gravelly silt loam	CL, CL-ML, GC, SC	A-4, A-6	0	0-10	55-90	55-85	45-75	40-70	20-35	5-15
	11-35	gravelly silty clay loam, gravelly silt loam	CL, GC, ML, SC	A-4, A-6, A-7	0	0-15	60-90	55-90	50-75	40-70	30-45	8-18
	35-60	clay, silty clay	CH, MH	A-7	0	0-10	80-100	80-100	75-90	70-85	50-70	20-35

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
DkB:												
Dickson---------	0-5	silt loam	CL, CL-ML, CH	A-4, A-6	0	0	100	95-100	90-100	75-95	20-38	3-17
	5-27	silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	95-100	85-95	25-38	5-17
	27-48	silt loam, silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	0	95-100	90-100	85-100	80-95	25-42	7-20
	48-60	clay, gravelly silty clay loam, gravelly clay	CL, GC, MH, ML	A-6, A-7	0	0-20	70-100	60-100	55-100	45-95	35-65	12-30
Eg:												
Egam------------	0-8	silt loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	95-100	95-100	85-100	75-95	21-45	4-20
	8-60	silty clay, silty clay loam, clay	CH, CL	A-6, A-7	0	0	95-100	95-100	90-100	85-95	38-60	15-30
GmC:												
Gladdice--------	0-8	silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	0-15	95-100	90-100	85-100	70-95	25-49	6-22
	8-12	clay, silty clay, silty clay loam	CH, CL, MH	A-7	0	0-15	95-100	90-100	85-100	75-95	45-72	20-40
	12-31	clay, silty clay	CH, MH	A-7	0	0-15	95-100	90-100	85-100	75-95	51-75	20-40
	31-35	unweathered bedrock			---	---	---	---	---	---	---	---
Mimosa----------	0-3	silt loam	CL, ML	A-4, A-6, A-7	0	0	80-100	75-100	65-95	60-90	25-45	7-20
	3-10	silty clay loam, silty clay, clay	CH, CL, MH, ML	A-7	0	0	95-100	90-100	85-95	80-90	45-60	18-28
	10-45	clay, silty clay	CH, MH	A-7	0	0	95-100	90-100	85-95	80-95	51-65	25-35
	45-49	unweathered bedrock			---	---	---	---	---	---	---	---
GmE:												
Gladdice--------	0-8	silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	0-15	95-100	90-100	85-100	70-95	25-49	6-22
	8-12	clay, silty clay, silty clay loam	CH, CL, MH	A-7	0	0-15	95-100	90-100	85-100	75-95	45-72	20-40
	12-31	clay, silty clay	CH, MH	A-7	0	0-15	95-100	90-100	85-100	75-95	51-75	20-40
	31-35	unweathered bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
GmE:												
Mimosa----------	0-3	silt loam	CL, ML	A-4, A-6, A-7	0	0	80-100	75-100	65-95	60-90	25-45	7-20
	3-10	silty clay loam, silty clay, clay	CH, CL, MH, ML	A-7	0	0	95-100	90-100	85-95	80-90	45-60	18-28
	10-45	clay, silty clay	CH, MH	A-7	0	0	95-100	90-100	85-95	80-95	51-65	25-35
	45-49	unweathered bedrock			---	---	---	---	---	---	---	---
Gu:												
Guthrie---------	0-14	silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	85-95	18-28	2-7
	14-30	silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	85-95	23-39	5-15
	30-60	silt loam, silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	0	90-100	85-100	80-100	70-95	20-42	5-20
HaC2:												
Hampshire-------	0-6	silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	80-90	20-40	3-20
	6-58	clay, silty clay loam, silty clay	CH, CL, MH	A-7	0	0-3	80-100	75-100	65-95	55-85	45-65	21-38
	58-60	weathered bedrock			---	---	---	---	---	---	---	---
HaC3:												
Hampshire-------	0-4	silty clay loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	85-95	30-48	11-25
	4-42	clay, silty clay loam, silty clay	CH, CL, MH	A-7	0	0-3	80-100	75-100	65-95	55-85	45-65	21-38
	42-50	very channery loam, very channery clay loam, very channery silty clay loam	CL, GC, GM, SC	A-2, A-6, A-7	0-5	10-50	55-75	50-75	40-70	30-60	30-48	11-25
	50-60	weathered bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HaD3:												
Hampshire-------	0-4	silty clay loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	85-95	30-48	11-25
	4-42	clay, silty clay loam, silty clay	CH, CL, MH	A-7	0	0-3	80-100	75-100	65-95	55-85	45-65	21-38
	42-50	very channery loam, very channery clay loam, very channery silty clay loam	CL, GC, GM, SC	A-2, A-6, A-7	0-5	10-50	55-75	50-75	40-70	30-60	30-48	11-25
	50-60	weathered bedrock			---	---	---	---	---	---	---	---
HgD:												
Hampshire-------	0-4	silty clay loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	85-95	30-48	11-25
	4-42	clay, silty clay loam, silty clay	CH, CL, MH	A-7	0	0-3	80-100	75-100	65-95	55-85	45-65	21-38
	42-50	very channery loam, very channery clay loam, very channery silty clay loam	CL, GC, GM, SC	A-2, A-6, A-7	0-5	10-50	55-75	50-75	40-70	30-60	30-48	11-25
	50-60	weathered bedrock			---	---	---	---	---	---	---	---
Gullied land.												
HsF:												
Hawthorne-------	0-12	gravelly silt loam	CL-ML, GC-GM, GM, ML	A-4	0	0-10	60-80	55-75	50-70	40-65	18-30	3-9
	12-26	very gravelly silty clay loam, very gravelly silt loam	CL-ML, GC-GM, GM, ML	A-2, A-4, A-6	0-5	0-15	55-75	45-70	40-65	30-60	20-35	3-12
	26-60	weathered bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
HsF:												
Sulphura--------	0-4	gravelly silt loam	CL, CL-ML, ML	A-4	0	0-8	70-90	65-85	60-80	55-75	20-32	2-10
	4-21	very channery silt loam, very channery silty clay loam, channery loam	GC, GC-GM	A-2, A-4, A-6	0	5-20	45-60	40-55	35-50	30-45	23-32	6-12
	21-25	weathered bedrock			---	---	---	---	---	---	---	---
	25-29	unweathered bedrock			---	---	---	---	---	---	---	---
HuA:												
Humphreys-------	0-9	gravelly silt loam	CL, CL-ML, GC-GM, ML	A-4	0	0-5	60-75	55-75	50-70	35-55	18-28	3-10
	9-39	gravelly silty clay loam, gravelly loam, gravelly silt loam	CL, GC, SC	A-6	0	0-5	55-75	50-75	45-70	40-60	28-40	10-16
	39-60	extremely gravelly sandy loam, gravelly loam, very gravelly loam	GM, GW-GM, GP-GM	A-1	0	0-25	50-80	35-70	20-50	5-25	0-15	NP-5
HuB:												
Humphreys-------	0-9	gravelly silt loam	CL, CL-ML, GC-GM, ML	A-4	---	0-5	60-75	55-75	50-70	35-55	18-28	3-10
	9-39	gravelly silty clay loam, gravelly loam, gravelly silt loam	CL, GC, SC	A-6	---	0-5	55-75	50-75	45-70	40-60	28-40	10-16
	39-60	extremely gravelly sandy loam, gravelly loam, very gravelly loam	GM, GW-GM, GP-GM	A-1	---	0-25	50-80	35-70	20-50	5-25	0-15	NP-5

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
LaB:												
Lax-------------	0-10	silt loam	CL, CL-ML, ML	A-4	0	0	80-100	75-100	70-95	55-85	15-30	3-10
	10-27	silt loam, silty clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-95	25-40	8-16
	27-50	gravelly silty clay loam, gravelly silt loam, extremely gravelly silty clay loam	GC	A-2	---	0-20	30-50	25-50	20-45	15-30	25-40	8-18
	50-60	gravelly silty clay loam, very gravelly clay, extremely gravelly silty clay	CH, CL, GC, SC	A-2, A-6, A-7	---	0-20	30-75	25-75	20-70	15-60	35-55	15-30
LaC:												
Lax-------------	0-10	silt loam	CL, CL-ML, ML	A-4	0	0	80-100	75-100	70-95	55-85	15-30	3-10
	10-27	silt loam, silty clay loam	CL	A-4, A-6	0	0	80-100	75-100	70-95	60-95	25-40	8-16
	27-50	gravelly silty clay loam, gravelly silt loam, extremely gravelly silty clay loam	GC	A-2	---	0-20	30-50	25-50	20-45	15-30	25-40	8-18
	50-60	gravelly silty clay loam, very gravelly clay, extremely gravelly silty clay	CH, CL, GC, SC	A-2, A-6, A-7	---	0-20	30-75	25-75	20-70	15-60	35-55	15-30
Ln:												
Lindside--------	0-12	silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	80-100	55-90	20-35	2-15
	12-60	silty clay loam, silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	90-100	70-95	25-40	4-18

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Lo:												
Lobelville------	0-6	silt loam	CL, CL-ML, ML	A-4	0	0-2	85-100	75-95	70-95	50-85	0-30	NP-10
	6-19	silt loam, loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0-2	85-100	75-95	70-95	50-85	22-35	3-12
	19-38	gravelly silt loam, gravelly loam, gravelly silty clay loam	CL-ML, GC-GM, GM, ML	A-4, A-6	0	0-3	70-90	60-80	55-80	40-75	22-35	3-12
	38-60	extremely gravelly clay loam, extremely gravelly sandy loam, very gravelly loam	GC, GC-GM, GM	A-1, A-2, A-4	0	0-5	30-65	15-50	15-45	10-40	0-30	NP-10
Me:												
Melvin----------	0-6	silt loam	CL, CL-ML, ML	A-4	0	0	95-100	90-100	80-100	80-95	25-35	4-10
	6-46	silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	80-98	25-40	5-20
	46-60	silt loam, silty clay loam, loam	CL, CL-ML	A-4, A-6	0	0	85-100	80-100	70-100	60-98	25-40	5-20
MnD:												
Minvale---------	0-6	gravelly silt loam	CL, GC, GM, ML	A-4	0	0-5	55-80	50-75	40-70	36-60	20-30	NP-10
	6-30	gravelly silty clay loam, gravelly silt loam, gravelly clay loam	CL, CL-ML, GC, GC-GM	A-4, A-6	0	0-5	50-75	50-75	40-70	36-65	20-40	5-15
	30-60	gravelly silty clay loam, gravelly clay loam	CL, GC, ML, SC	A-4, A-6, A-7	0	0-5	55-80	50-75	40-70	36-65	25-50	7-23

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
MsD3:												
Minvale---------	0-5	silty clay loam	CL, CL-ML, ML	A-4	0	0-5	75-95	75-90	65-85	55-75	20-30	NP-10
	5-28	gravelly silty clay loam, gravelly silt loam, gravelly loam	CL, CL-ML, GC, GC-GM	A-4, A-6	0	0-5	50-75	50-75	40-70	36-65	20-40	5-15
	28-60	gravelly silty clay loam, gravelly clay loam			---	---	---	---	---	---	---	---
MtB:												
Mountview-------	0-6	silt loam	CL-ML, GC	A-4	0	0	100	95-100	95-100	80-96	20-30	2-7
	6-35	silt loam, silty clay loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	80-96	30-43	10-23
	35-60	gravelly silty clay, gravelly clay, gravelly silty clay loam	CH, CL, MH, ML	A-6, A-7	0	0-20	75-100	65-100	60-98	50-96	35-65	11-32
Nr:												
Norene----------	0-18	silt loam	CL, CL-ML, ML	A-4	0	0	95-100	90-100	80-100	80-95	25-35	4-12
	18-53	silt loam, silty clay loam	CL, CL-ML	A-7, A-6	0	0	95-100	90-100	80-100	80-95	30-43	11-20
	53-60	clay, silty clay	CH, MH	A-7, A-6	0	0	95-100	90-100	85-100	75-95	38-60	15-32
PaB:												
Paden-----------	0-6	silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	75-90	20-40	3-15
	6-25	silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	75-95	25-40	6-15
	25-41	silt loam, clay loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	70-90	25-40	6-16
	41-60	gravelly clay loam, silty clay	CH, CL, GC, SC	A-6, A-7	---	0-10	60-100	50-100	45-90	36-90	34-50	13-25

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
PaC2:												
Paden-----------	0-4	silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	75-90	20-40	3-15
	4-23	silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	75-95	25-40	6-15
	23-41	silt loam, clay loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	70-90	25-40	6-16
	41-60	gravelly clay loam, silty clay	CL, GC, SC	A-6, A-7	---	0-10	60-100	50-100	45-90	36-90	34-50	13-25
PkB:												
Pickwick--------	0-8	silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	90-100	70-95	18-32	2-11
	8-41	silty clay loam, silt loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	75-95	30-42	11-17
	41-118	silty clay, silty clay loam, clay	CL, CH	A-7, A-6	---	0-5	80-100	75-100	65-95	55-80	33-52	15-25
PkC2:												
Pickwick--------	0-7	silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	90-100	70-95	18-32	2-11
	7-36	silty clay loam, silt loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	75-95	30-42	11-17
	36-60	silty clay loam, clay loam, clay	CL, CH	A-7, A-6	---	0-5	80-100	75-100	65-95	55-80	33-52	12-22
PkC3:												
Pickwick--------	0-2	silty clay loam	CL, ML	A-6, A-7	0	0	95-100	95-100	90-100	80-95	32-42	11-18
	2-40	silty clay loam, silt loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	75-95	30-42	11-17
	40-60	silty clay loam, clay loam, clay	CL, CH	A-7, A-6	---	0-5	80-100	75-100	65-95	55-80	33-52	15-25
Ra:												
Riverby---------	0-12	gravelly sandy loam	GC-GM, GM, SM, SW-SM	A-1, A-2, A-4	0	0-15	50-85	40-75	30-65	15-50	0-15	NP-5
	12-60	very gravelly sandy loam, extremely gravelly sandy loam	GM, GW-GM, GP-GM	A-1	0-5	0-50	50-80	35-70	20-50	5-25	0-15	NP-5

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
SaD:												
Saffell---------	0-4	gravelly fine sandy loam	GC-GM, GM, SC-SM, SM	A-1, A-2, A-4	0	0-5	50-80	50-75	40-70	20-50	0-25	NP-5
	4-13	gravelly fine sandy loam, gravelly sandy clay loam, gravelly loam	GC, GC-GM, SC, SC-SM	A-1, A-2, A-4, A-6	0	0-10	30-75	25-75	20-70	12-50	20-40	4-18
	13-37	very gravelly sandy clay loam, very gravelly clay loam, very gravelly loam	GC, GC-GM, GP-GC	A-1, A-2, A-4, A-6	0	0-10	25-55	25-50	20-50	12-40	20-40	4-15
	37-60	gravelly sandy loam, very gravelly sandy loam	GC, GM, SC, SM	A-1, A-2, A-3	0-5	0-15	15-80	10-75	10-65	5-35	0-35	NP-15
SaF:												
Saffell---------	0-4	gravelly fine sandy loam	GC-GM, GM, SC-SM, SM	A-1, A-2, A-4	0	0-5	50-80	50-75	40-70	20-50	0-25	NP-5
	4-13	gravelly fine sandy loam, gravelly sandy clay loam, gravelly loam	GC, GC-GM, SC, SC-SM	A-1, A-2, A-4, A-6	0	0-10	30-75	25-75	20-70	12-50	20-40	4-18
	13-37	very gravelly sandy clay loam, very gravelly clay loam, very gravelly loam	GC, GC-GM, GP-GC	A-1, A-2, A-4, A-6	0	0-10	25-55	25-50	20-50	12-40	20-40	4-15
	37-60	gravelly sandy loam, very gravelly sandy loam	GC, GM, SC, SM	A-1, A-2, A-3	0-5	0-15	15-80	10-75	10-65	5-35	0-35	NP-15
SeC:												
Sengtown--------	0-10	gravelly silt loam	CL, CL-ML, GM, ML	A-4	0-2	0-5	60-90	55-80	45-75	45-70	25-35	4-10
	10-18	gravelly silt loam, gravelly silty clay loam	CL, CL-ML, GC-GM	A-4, A-6	0-2	0-5	60-90	55-80	45-75	45-70	25-40	5-20
	18-60	gravelly clay, gravelly silty clay	CH, CL, GC	A-7	0-2	0-5	50-90	40-75	40-70	40-70	45-70	20-40

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
SeD2:												
Sengtown--------	0-6	gravelly silt loam	CL, CL-ML, GM, ML	A-4	0-2	0-5	60-90	55-80	45-75	45-70	25-35	4-10
	6-18	gravelly silt loam, gravelly silty clay loam	CL, CL-ML, GC-GM	A-4, A-6	0-2	0-5	60-90	55-80	45-75	45-70	25-40	5-20
	18-60	gravelly clay, gravelly silty clay	CH, CL, GC	A-7	0-2	0-5	50-90	40-75	40-70	40-70	45-70	20-40
SeF:												
Sengtown--------	0-10	gravelly silt loam	CL, CL-ML, GM, ML	A-4	0-2	0-5	60-90	55-80	45-75	45-70	25-35	4-10
	10-18	gravelly silt loam, gravelly silty clay loam	CL, CL-ML, GC-GM	A-4, A-6	0-2	0-5	60-90	55-80	45-75	45-70	25-40	5-20
	18-60	gravelly clay, gravelly silty clay	CH, CL, GC	A-7	0-2	0-5	50-90	40-75	40-70	40-70	45-70	20-40
SmC2:												
Sengtown--------	0-6	gravelly silt loam	CL, CL-ML, GM, ML	A-4	0-2	0-5	60-90	55-80	45-75	45-70	25-35	4-10
	6-18	gravelly silt loam, gravelly silty clay loam	CL, CL-ML, GC-GM	A-4, A-6	0-2	0-5	60-90	55-80	45-75	45-70	25-40	5-20
	18-60	gravelly clay, gravelly silty clay	CH, CL, GC	A-7	0-2	0-5	50-90	40-75	40-70	40-70	45-70	20-40
Mountview-------	0-6	silt loam	CL-ML, ML	A-4	0	0	100	95-100	95-100	80-96	20-30	2-7
	6-24	silt loam, silty clay loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	80-96	30-43	10-23
	24-60	gravelly silty clay, gravelly clay, gravelly silty clay loam	CH, CL, MH, GC	A-6, A-7	0	0-20	75-100	65-100	60-98	50-96	35-65	11-32

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SrF:												
Sengtown	0-10	gravelly silt loam	CL, CL-ML, GM, ML	A-4	0-2	0-5	60-90	55-80	45-75	45-70	25-35	4-10
	10-18	gravelly silt loam, gravelly silty clay loam	CL, CL-ML, GC-GM	A-4, A-6	0-2	0-5	60-90	55-80	45-75	45-70	25-40	5-20
	18-60	gravelly clay, gravelly silty clay	CH, CL, GC	A-7	0-2	0-5	50-90	40-75	40-70	40-70	45-70	20-40
Rock outcrop.												
Su:												
Sullivan	0-56	silt loam, loam	CL, CL-ML, ML, SM	A-4	0	0	80-100	75-100	60-100	36-90	20-31	3-10
	56-60	gravelly fine sandy loam, gravelly loam	GM, SC, SC-SM, SM	A-2, A-4	0	0-5	65-100	55-100	45-85	25-55	20-30	3-10
ThC2:												
Tarklin	0-6	gravelly silt loam	CL, GM, ML, SM	A-4	---	0-10	60-80	55-75	45-75	40-70	25-35	2-10
	6-35	silt loam, gravelly silty clay loam, silty clay loam	CL, GC, GM, ML	A-4, A-6, A-7-6	---	0-10	80-100	65-90	60-85	55-75	25-45	2-20
	35-60	gravelly silt loam, very gravelly silty clay loam	CL, GC, GM, ML	A-2, A-4, A-6, A-7-6	---	0-10	60-80	45-75	40-75	30-70	25-45	2-20
Humphreys	0-5	gravelly silt loam	CL, CL-ML, GC-GM, ML	A-4	0	0-5	60-75	55-75	50-70	35-55	18-28	3-10
	5-58	gravelly silty clay loam, gravelly clay loam, gravelly silt loam	CL, GC, SC	A-6	0	0-5	55-75	50-75	45-70	40-60	28-40	10-16
	58-60	very gravelly sandy loam, gravelly loam, extremely gravelly sandy loam	GM, GW-GM, GP-GM	A-1	0	0-25	50-80	35-70	20-50	5-25	0-25	NP-5

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
TrA:												
Trace-----------	0-8	silt loam	CL, CL-ML, ML	A-4	0	0	90-100	85-100	75-95	70-90	18-30	NP-10
	8-36	silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	75-95	70-95	20-40	5-15
	36-41	very gravelly loam, gravelly silt loam, very gravelly clay loam	CL, GC, GC-GM	A-1-b, A-2, A-4, A-6	0	0-5	45-75	40-75	30-65	20-55	15-35	4-13
	41-60	extremely gravelly sandy loam, extremely gravelly loam, extremely gravelly silt loam	GM, GP-GM, GW-GM	A-1	0	0-10	25-40	10-30	5-25	5-15	0-25	NP-5
TrB:												
Trace-----------	0-8	silt loam	CL, CL-ML, ML	A-4	0	0	90-100	85-100	75-95	70-90	18-30	NP-10
	8-36	silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	75-95	70-95	20-40	5-15
	36-41	very gravelly loam, gravelly silt loam, very gravelly clay loam	CL, GC, GC-GM	A-1-b, A-2, A-4, A-6	0	0-5	45-75	40-75	30-65	20-55	15-35	4-13
	41-60	extremely gravelly sandy loam, extremely gravelly loam, extremely gravelly silt loam	GM, GP-GM, GW-GM	A-1	0	0-10	25-40	10-30	5-25	5-15	0-25	NP-5
Ua. Udarents												
Ud. Udarents												
W. Water												

Table 14.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Wm:												
Woodmont--------	0-9	silt loam	CL, CL-ML, ML	A-4	0	0	100	95-100	90-100	80-90	20-30	3-10
	9-22	silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-95	25-35	7-15
	22-60	silt loam, silty clay loam	CL	A-4, A-6	---	0-2	95-100	85-100	80-100	75-95	25-40	8-20

Table 15.—Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile)

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity (Ksat)	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T
	In	Pct	g/cc	um/sec	In/in					
AmB:										
Armour----------	0-8	15-27	1.30-1.45	4.23-14.11	0.18-0.23	0.0-2.9	1.0-3.0	.43	.43	5
	8-87	22-35	1.30-1.60	4.23-14.11	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37	
AmC:										
Armour----------	0-8	15-27	1.30-1.45	4.23-14.11	0.18-0.23	0.0-2.9	1.0-3.0	.43	.43	5
	8-87	22-35	1.30-1.60	4.23-14.11	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37	
AmC3:										
Armour----------	0-6	27-35	1.30-1.45	4.23-14.11	0.12-0.20	0.0-2.9	0.5-1.0	.37	.37	5
	6-60	22-35	1.30-1.60	4.23-14.11	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37	
An:										
Arrington-------	0-10	18-27	1.30-1.45	4.23-14.11	0.19-0.22	0.0-2.9	2.0-4.0	.37	.37	5
	10-60	18-35	1.30-1.45	4.23-14.11	0.19-0.22	0.0-2.9	0.5-2.0	.37	.37	
BaF:										
Barfield--------	0-7	35-40	1.30-1.50	1.41-4.23	0.10-0.15	3.0-5.9	2.0-4.0	.24	.24	1
	7-16	35-55	1.30-1.50	1.41-4.23	0.09-0.14	6.0-8.9	1.0-3.0	.17	.20	
	16-20	---	---	---	---	---	---	---	---	
Rock outcrop.										
BbC:										
Biffle----------	0-11	15-22	1.30-1.50	14.11-42.34	0.10-0.16	0.0-2.9	0.5-1.0	.24	.37	3
	11-32	20-32	1.40-1.60	14.11-42.34	0.08-0.14	0.0-2.9	0.0-0.5	.20	.32	
	32-60	---	---	0.42-4.23	---	---	0.0-0.5	---	---	
BbD:										
Biffle----------	0-11	15-22	1.30-1.50	14.11-42.34	0.10-0.16	0.0-2.9	0.5-1.0	.24	.37	3
	11-32	20-32	1.40-1.60	14.11-42.34	0.08-0.14	0.0-2.9	0.0-0.5	.20	.32	
	32-60	---	---	0.42-4.23	---	---	0.0-0.5	---	---	
BbF:										
Biffle----------	0-11	15-22	1.30-1.50	14.11-42.34	0.10-0.16	0.0-2.9	0.5-1.0	.24	.37	3
	11-32	20-32	1.40-1.60	14.11-42.34	0.08-0.14	0.0-2.9	0.0-0.5	.20	.32	
	32-60	---	---	0.42-4.23	---	---	0.0-0.5	---	---	
DeC2:										
Dellrose--------	0-11	15-27	1.20-1.40	14.11-42.34	0.10-0.17	0.0-2.9	1.0-3.0	.24	.32	5
	11-35	20-35	1.20-1.40	14.11-42.34	0.09-0.16	0.0-2.9	0.0-0.5	.24	.28	
	35-60	40-55	1.30-1.50	4.23-14.11	0.08-0.12	3.0-5.9	0.0-0.5	.24	.24	
DeD2:										
Dellrose--------	0-11	15-27	1.20-1.40	14.11-42.34	0.10-0.17	0.0-2.9	1.0-3.0	.24	.32	5
	11-35	20-35	1.20-1.40	14.11-42.34	0.09-0.16	0.0-2.9	0.0-0.5	.24	.28	
	35-60	40-55	1.30-1.50	4.23-14.11	0.08-0.12	3.0-5.9	0.0-0.5	.24	.24	
DkB:										
Dickson---------	0-5	18-32	1.30-1.50	4.23-14.11	0.18-0.22	0.0-2.9	0.5-2.0	.43	.43	4
	5-27	18-32	1.35-1.55	4.23-14.11	0.18-0.20	0.0-2.9	0.0-0.5	.43	.43	
	27-48	20-32	1.55-1.75	0.42-4.23	0.05-0.11	0.0-2.9	0.0-0.5	.43	.43	
	48-60	35-50	1.35-1.55	1.41-4.23	0.02-0.04	3.0-5.9	0.0-0.5	.28	.32	
Eg:										
Egam------------	0-8	20-27	1.30-1.45	1.41-4.23	0.18-0.22	3.0-5.9	2.0-4.0	.32	.32	5
	8-60	35-50	1.30-1.45	1.41-4.23	0.14-0.20	3.0-5.9	0.0-0.5	.32	.32	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity (Ksat)	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Kf	T
	In	Pct	g/cc	um/sec	In/in					
GmC:										
Gladdice	0-8	27-40	1.20-1.40	4.23-14.11	0.14-0.18	3.0-5.9	2.0-5.0	.28	.32	2
	8-12	35-55	1.30-1.45	1.41-4.23	0.12-0.15	6.0-8.9	0.5-1.0	.24	.24	
	12-31	40-60	1.30-1.45	1.41-4.23	0.12-0.15	6.0-8.9	0.5-1.0	.24	.24	
	31-35	---	---	0.42-4.23	---	---	---	---	---	
Mimosa	0-3	24-27	1.30-1.50	4.23-14.11	0.12-0.20	0.0-2.9	1.0-3.0	.37	.37	3
	3-10	35-55	1.30-1.50	1.41-4.23	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	10-45	45-60	1.35-1.55	0.42-1.41	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24	
	45-49	---	---	---	---	---	---	---	---	
GmE:										
Gladdice	0-8	27-40	1.20-1.40	4.23-14.11	0.14-0.18	3.0-5.9	2.0-5.0	.28	.32	2
	8-12	35-55	1.30-1.45	1.41-4.23	0.12-0.15	6.0-8.9	0.5-1.0	.24	.24	
	12-31	40-60	1.30-1.45	1.41-4.23	0.12-0.15	6.0-8.9	0.5-1.0	.24	.24	
	31-35	---	---	0.42-4.23	---	---	---	---	---	
Mimosa	0-3	24-27	1.30-1.50	4.23-14.11	0.12-0.20	0.0-2.9	1.0-3.0	.37	.37	3
	3-10	35-55	1.30-1.50	1.41-4.23	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	10-45	45-60	1.35-1.55	0.42-1.41	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24	
	45-49	---	---	---	---	---	---	---	---	
Gu:										
Guthrie	0-14	10-25	1.35-1.55	4.23-14.11	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4
	14-30	18-30	1.40-1.60	4.23-14.11	0.18-0.20	0.0-2.9	0.0-0.5	.43	.43	
	30-60	18-32	1.60-1.75	0.42-1.41	0.03-0.05	0.0-2.9	0.0-0.5	.43	.43	
HaC2:										
Hampshire	0-6	15-27	1.35-1.50	4.23-14.11	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43	4
	6-58	35-50	1.25-1.45	1.41-4.23	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	58-60	---	---	0.00-1.41	---	---	---	---	---	
HaC3:										
Hampshire	0-4	27-40	1.30-1.45	4.23-14.11	0.14-0.18	3.0-5.9	0.5-1.0	.32	.32	3
	4-42	35-50	1.25-1.45	1.41-4.23	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	42-50	22-40	1.30-1.50	4.23-14.11	0.07-0.12	0.0-2.9	0.0-0.5	.24	.32	
	50-60	---	---	0.00-1.41	---	---	---	---	---	
HaD3:										
Hampshire	0-4	27-40	1.30-1.45	4.23-14.11	0.14-0.18	3.0-5.9	0.5-1.0	.32	.32	3
	4-42	35-50	1.25-1.45	1.41-4.23	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	42-50	22-40	1.30-1.50	4.23-14.11	0.07-0.12	0.0-2.9	0.0-0.5	.24	.32	
	50-60	---	---	0.00-1.41	---	---	---	---	---	
HgD:										
Hampshire	0-4	27-40	1.30-1.45	4.23-14.11	0.14-0.18	3.0-5.9	0.5-1.0	.32	.32	3
	4-42	35-50	1.25-1.45	1.41-4.23	0.12-0.16	3.0-5.9	0.0-0.5	.28	.28	
	42-50	22-40	1.30-1.50	4.23-14.11	0.07-0.12	0.0-2.9	0.0-0.5	.24	.32	
	50-60	---	---	0.00-1.41	---	---	---	---	---	
Gullied land.										
HsF:										
Hawthorne	0-12	12-25	1.40-1.50	14.11-42.34	0.14-0.18	0.0-2.9	1.0-3.0	.20	.37	3
	12-26	15-32	1.40-1.50	14.11-42.34	0.05-0.10	0.0-2.9	0.0-0.5	.10	.32	
	26-60	---	---	0.00-1.41	---	---	---	---	---	
Sulphura	0-4	15-25	1.30-1.50	14.11-42.34	0.12-0.17	0.0-2.9	0.5-2.0	.24	.37	2
	4-21	18-32	1.35-1.55	14.11-42.34	0.07-0.14	0.0-2.9	0.0-0.5	.24	.32	
	21-25	---	---	0.00-0.42	---	---	---	---	---	
	25-29	---	---	---	---	---	---	---	---	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity (Ksat)	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors		
								K	Kf	T
	In	Pct	g/cc	um/sec	In/in					
HuA:										
Humphreys-------	0-9	12-25	1.35-1.50	14.11-42.34	0.10-0.15	0.0-2.9	1.0-3.0	.28	.32	5
	9-39	18-32	1.35-1.55	14.11-42.34	0.09-0.14	0.0-2.9	0.0-0.5	.24	.28	
	39-60	5-18	1.40-1.60	42.34-141.1	0.01-0.07	0.0-2.9	0.0-0.5	.15	.24	
HuB:										
Humphreys-------	0-9	12-25	1.35-1.50	14.11-42.34	0.10-0.15	0.0-2.9	1.0-3.0	.28	.32	5
	9-39	18-32	1.35-1.55	14.11-42.34	0.09-0.14	0.0-2.9	---	.24	.28	
	39-60	5-18	1.40-1.60	42.34-141.1	0.01-0.07	0.0-2.9	---	.15	.24	
LaB:										
Lax-------------	0-10	8-25	1.30-1.45	4.23-14.11	0.18-0.22	0.0-2.9	0.5-2.0	.43	.49	4
	10-27	18-35	1.30-1.50	4.23-14.11	0.16-0.20	0.0-2.9	0.0-0.5	.43	.43	
	27-50	18-35	1.50-1.75	0.42-1.41	0.06-0.10	0.0-2.9	0.0-0.5	.37	.43	
	50-60	30-45	1.40-1.60	4.23-42.34	0.06-0.10	3.0-5.9	0.0-0.5	.32	.43	
LaC:										
Lax-------------	0-10	8-25	1.30-1.45	4.23-14.11	0.18-0.22	0.0-2.9	0.5-2.0	.43	.49	4
	10-27	18-35	1.30-1.50	4.23-14.11	0.16-0.20	0.0-2.9	0.0-0.5	.43	.43	
	27-50	18-35	1.50-1.75	0.42-1.41	0.06-0.10	0.0-2.9	0.0-0.5	.37	.43	
	50-60	30-45	1.40-1.60	4.23-42.34	0.06-0.10	3.0-5.9	0.0-0.5	.32	.43	
Ln:										
Lindside--------	0-12	15-27	1.20-1.40	4.23-14.11	0.20-0.26	0.0-2.9	2.0-4.0	.32	.32	5
	12-60	18-35	1.20-1.40	4.23-14.11	0.17-0.22	0.0-2.9	0.0-0.5	.37	.37	
Lo:										
Lobelville------	0-6	15-27	1.30-1.45	4.23-14.11	0.14-0.19	0.0-2.9	1.0-2.0	.32	.32	4
	6-19	18-32	1.35-1.50	4.23-14.11	0.14-0.19	0.0-2.9	0.5-1.0	.32	.32	
	19-38	18-32	1.35-1.50	4.23-14.11	0.12-0.17	0.0-2.9	0.0-0.5	.28	.32	
	38-60	10-30	1.35-1.55	14.11-42.34	0.04-0.10	0.0-2.9	0.0-0.5	.20	.32	
Me:										
Melvin----------	0-6	12-17	1.20-1.60	4.23-14.11	0.18-0.23	0.0-2.9	0.5-3.0	.43	.43	5
	6-46	12-35	1.30-1.60	4.23-14.11	0.18-0.23	0.0-2.9	0.5-2.0	.43	.43	
	46-60	7-40	1.40-1.70	4.23-14.11	0.16-0.23	0.0-2.9	0.2-1.0	.43	.43	
MnD:										
Minvale---------	0-6	15-27	1.30-1.45	14.11-42.34	0.14-0.18	0.0-2.9	0.5-2.0	.28	.37	5
	6-30	20-35	1.40-1.55	4.23-14.11	0.12-0.18	0.0-2.9	0.0-0.5	.28	.32	
	30-60	25-45	1.40-1.55	4.23-14.11	0.11-0.17	0.0-2.9	0.0-0.5	.28	.32	
MsD3:										
Minvale---------	0-5	27-30	1.30-1.45	4.23-14.11	0.16-0.22	0.0-2.9	0.5-2.0	.32	.37	5
	5-28	20-35	1.40-1.55	4.23-14.11	0.12-0.18	0.0-2.9	0.0-0.5	.28	.32	
	28-60	---	---	---	---	---	---	.28	.32	
MtB:										
Mountview-------	0-6	15-25	1.35-1.55	4.23-14.11	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43	5
	6-35	20-35	1.40-1.60	4.23-14.11	0.17-0.20	0.0-2.9	---	.43	.43	
	35-60	35-55	1.30-1.50	4.23-14.11	0.10-0.15	3.0-5.9	---	.32	.32	
Nr:										
Norene----------	0-18	15-27	1.20-1.60	4.23-14.11	0.18-0.23	0.0-2.9	0.5-2.0	.43	.43	5
	18-53	23-35	1.30-1.60	4.23-14.11	0.16-0.22	0.0-2.9	0.0-0.5	.43	.43	
	53-60	35-50	1.30-1.55	1.41-4.23	0.12-0.18	3.0-5.9	0.0-0.5	.37	.37	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity (Ksat)	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Kf	T
	In	Pct	g/cc	um/sec	In/in					
PaB:										
Paden-----------	0-6	18-27	1.30-1.45	4.23-14.11	0.18-0.23	0.0-2.9	0.5-3.0	.43	.43	4
	6-25	20-32	1.40-1.55	4.23-14.11	0.18-0.22	0.0-2.9	0.0-0.5	.43	.43	
	25-41	20-35	1.60-1.80	0.42-1.41	0.07-0.12	0.0-2.9	0.0-0.5	.43	.43	
	41-60	25-45	1.60-1.80	4.23-14.11	0.07-0.12	0.0-2.9	0.0-0.5	.24	.24	
PaC2:										
Paden-----------	0-4	18-27	1.30-1.45	4.23-14.11	0.18-0.23	0.0-2.9	0.5-3.0	.43	.43	4
	4-23	20-32	1.40-1.55	4.23-14.11	0.18-0.22	0.0-2.9	0.0-0.5	.43	.43	
	23-41	20-35	1.60-1.80	0.42-1.41	0.07-0.12	0.0-2.9	0.0-0.5	.43	.43	
	41-60	25-45	1.60-1.80	4.23-14.11	0.07-0.12	0.0-2.9	0.0-0.5	.24	.24	
PkB:										
Pickwick--------	0-8	12-22	1.30-1.50	4.23-14.11	0.20-0.23	0.0-2.9	0.5-3.0	.43	.43	5
	8-41	22-35	1.40-1.65	4.23-14.11	0.19-0.22	0.0-2.9	0.0-0.5	.37	.37	
	41-118	35-55	1.45-1.65	4.23-14.11	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37	
PkC2:										
Pickwick--------	0-7	12-22	1.30-1.50	4.23-14.11	0.20-0.23	0.0-2.9	0.5-3.0	.43	.43	5
	7-36	22-35	1.40-1.65	4.23-14.11	0.19-0.22	0.0-2.9	0.0-0.5	.37	.37	
	36-60	35-55	1.45-1.65	4.23-14.11	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37	
PkC3:										
Pickwick--------	0-2	27-35	1.30-1.50	4.23-14.11	0.18-0.22	0.0-2.9	0.5-2.0	.37	.37	5
	2-40	22-35	1.40-1.65	4.23-14.11	0.19-0.22	0.0-2.9	0.0-0.5	.37	.37	
	40-60	35-55	1.45-1.65	4.23-14.11	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37	
Ra:										
Riverby---------	0-12	5-12	1.20-1.40	14.11-42.34	0.08-0.12	0.0-2.9	1.0-2.0	.20	.24	3
	12-60	4-20	1.30-1.60	42.34-141.1	0.03-0.06	0.0-2.9	0.0-2.0	.15	.24	
SaD:										
Saffell---------	0-4	5-20	1.35-1.60	14.11-42.34	0.07-0.17	0.0-2.9	1.0-2.0	.20	.24	5
	4-13	10-35	1.35-1.60	4.23-14.11	0.06-0.15	0.0-2.9	0.5-1.0	.28	.24	
	13-37	12-35	1.35-1.60	4.23-14.11	0.06-0.12	0.0-2.9	0.0-0.5	.28	.32	
	37-60	10-25	1.40-1.65	4.23-42.34	0.04-0.11	0.0-2.9	0.0-0.5	.17	.20	
SaF:										
Saffell---------	0-4	5-20	1.35-1.60	14.11-42.34	0.07-0.17	0.0-2.9	1.0-2.0	.20	.24	5
	4-13	10-35	1.35-1.60	4.23-14.11	0.06-0.15	0.0-2.9	0.5-1.0	.28	.24	
	13-37	12-35	1.35-1.60	4.23-14.11	0.06-0.12	0.0-2.9	0.0-0.5	.28	.32	
	37-60	10-25	1.40-1.65	4.23-42.34	0.04-0.11	0.0-2.9	0.0-0.5	.17	.20	
SeC:										
Sengtown--------	0-10	12-27	1.35-1.55	4.23-14.11	0.10-0.16	0.0-2.9	1.0-2.0	.28	.37	5
	10-18	23-40	1.35-1.55	4.23-14.11	0.10-0.15	0.0-2.9	0.0-0.5	.24	.32	
	18-60	40-60	1.35-1.60	4.23-14.11	0.08-0.12	3.0-5.9	0.0-0.5	.24	.28	
SeD2:										
Sengtown--------	0-6	12-27	1.35-1.55	4.23-14.11	0.10-0.16	0.0-2.9	1.0-2.0	.28	.37	5
	6-18	23-40	1.35-1.55	4.23-14.11	0.10-0.15	0.0-2.9	0.0-0.5	.24	.32	
	18-60	40-60	1.35-1.60	4.23-14.11	0.08-0.12	3.0-5.9	0.0-0.5	.24	.28	
SeF:										
Sengtown--------	0-10	12-27	1.35-1.55	4.23-14.11	0.10-0.16	0.0-2.9	1.0-2.0	.28	.37	5
	10-18	23-40	1.35-1.55	4.23-14.11	0.10-0.15	0.0-2.9	0.0-0.5	.24	.32	
	18-60	40-60	1.35-1.60	4.23-14.11	0.08-0.12	3.0-5.9	0.0-0.5	.24	.28	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Saturated hydraulic conductivity (Ksat)	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T
	In	Pct	g/cc	um/sec	In/in					
SmC2:										
Sengtown--------	0-6	12-27	1.35-1.55	4.23-14.11	0.10-0.16	0.0-2.9	1.0-2.0	.28	.37	5
	6-18	23-40	1.35-1.55	4.23-14.11	0.10-0.15	0.0-2.9	0.0-0.5	.24	.32	
	18-60	40-60	1.35-1.60	4.23-14.11	0.08-0.12	3.0-5.9	0.0-0.5	.24	.28	
Mountview-------	0-6	15-25	1.35-1.55	4.23-14.11	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43	5
	6-24	20-35	1.40-1.60	4.23-14.11	0.17-0.20	0.0-2.9	---	.43	.43	
	24-60	35-55	1.30-1.50	4.23-14.11	0.10-0.15	3.0-5.9	---	.32	.32	
SrF:										
Sengtown--------	0-10	12-27	1.35-1.55	4.23-14.11	0.10-0.16	0.0-2.9	1.0-2.0	.28	.37	5
	10-18	23-40	1.35-1.55	4.23-14.11	0.10-0.15	0.0-2.9	0.0-0.5	.24	.32	
	18-60	40-60	1.35-1.60	4.23-14.11	0.08-0.12	3.0-5.9	0.0-0.5	.24	.28	
Rock outcrop.										
Su:										
Sullivan--------	0-56	18-25	1.30-1.45	4.23-14.11	0.12-0.20	0.0-2.9	1.0-3.0	.32	.32	5
	56-60	15-25	1.30-1.45	14.11-42.34	0.09-0.14	0.0-2.9	0.0-0.5	.32	.32	
ThC2:										
Tarklin---------	0-6	18-25	1.25-1.45	4.23-42.34	0.13-0.18	0.0-2.9	0.5-2.0	.28	.32	3
	6-35	20-34	1.45-1.55	4.23-42.34	0.13-0.18	0.0-2.9	0.0-0.5	.28	.32	
	35-60	20-34	1.45-1.60	0.42-1.41	0.06-0.10	0.0-2.9	0.0-0.5	.28	.32	
Humphreys-------	0-5	12-25	1.35-1.50	14.11-42.34	0.10-0.15	0.0-2.9	1.0-3.0	.28	.32	5
	5-58	18-32	1.35-1.55	14.11-42.34	0.09-0.14	0.0-2.9	0.0-0.5	.24	.28	
	58-60	5-18	1.40-1.60	42.34-141.1	0.01-0.07	0.0-2.9	0.0-0.5	.15	.24	
TrA:										
Trace-----------	0-8	12-22	1.30-1.45	4.23-14.11	0.18-0.23	0.0-2.9	1.0-3.0	.37	.43	4
	8-36	18-32	1.30-1.50	4.23-14.11	0.17-0.21	0.0-2.9	0.0-0.5	.32	.37	
	36-41	12-30	1.40-1.60	4.23-42.34	0.07-0.14	0.0-2.9	0.0-0.5	.28	.32	
	41-60	5-18	1.40-1.60	42.34-141.1	0.01-0.07	0.0-2.9	0.0-0.5	.15	.24	
TrB:										
Trace-----------	0-8	12-22	1.30-1.45	4.23-14.11	0.18-0.23	0.0-2.9	1.0-3.0	.37	.43	4
	8-36	18-32	1.30-1.50	4.23-14.11	0.17-0.21	0.0-2.9	0.0-0.5	.32	.37	
	36-41	12-30	1.40-1.60	4.23-42.34	0.07-0.14	0.0-2.9	0.0-0.5	.28	.32	
	41-60	5-18	1.40-1.60	42.34-141.1	0.01-0.07	0.0-2.9	0.0-0.5	.15	.24	
Ua. Udarents										
Ud. Udarents										
W. Water										
Wm:										
Woodmont--------	0-9	15-25	1.35-1.50	4.23-14.11	0.18-0.20	0.0-2.9	0.5-2.0	.43	.43	4
	9-22	18-30	1.40-1.60	4.23-14.11	0.17-0.20	0.0-2.9	0.0-0.5	.43	.43	
	22-60	18-35	1.60-1.75	0.42-1.41	0.05-0.09	0.0-2.9	0.0-0.5	.43	.43	

Table 16.—Chemical Properties of the Soils

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100g	meq/100g	pH
AmB:				
Armour----------	0-8	---	10-15	5.1-6.0
	8-87	---	15-25	5.1-6.0
AmC:				
Armour----------	0-8	---	10-15	5.1-6.0
	8-87	---	15-25	5.1-6.0
AmC3:				
Armour----------	0-6	---	10-15	5.1-6.0
	6-60	---	15-25	5.1-6.0
An:				
Arrington-------	0-10	15-20	---	6.5-7.0
	10-60	12-18	---	6.5-7.0
BaF:				
Barfield--------	0-7	15-30	---	6.1-7.8
	7-16	15-30	---	6.1-7.8
	16-20	---	---	---
Rock outcrop.				
BbC:				
Biffle----------	0-11	---	5.0-15	3.6-5.0
	11-32	---	5.0-15	3.6-5.0
	32-60	---	---	---
BbD:				
Biffle----------	0-11	---	5.0-15	3.6-5.0
	11-32	---	5.0-15	3.6-5.0
	32-60	---	---	---
BbF:				
Biffle----------	0-11	---	5.0-15	3.6-5.0
	11-32	---	5.0-15	3.6-5.0
	32-60	---	---	---
DeC2:				
Dellrose--------	0-11	---	5.0-15	4.5-6.0
	11-35	---	5.0-15	4.5-6.0
	35-60	---	12-35	4.5-6.0
DeD2:				
Dellrose--------	0-11	---	5.0-15	4.5-6.0
	11-35	---	5.0-15	4.5-6.0
	35-60	---	12-35	4.5-6.0
DkB:				
Dickson---------	0-5	---	5.0-10	4.5-5.5
	5-27	---	5.0-15	4.5-5.5
	27-48	---	5.0-15	4.5-5.5
	48-60	---	5.0-10	4.5-5.5
Eg:				
Egam------------	0-8	10-15	---	5.6-7.0
	8-60	15-25	---	5.6-7.0

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100g	meq/100g	pH
GmC:				
Gladdice--------	0-8	10-15	---	5.6-7.8
	8-12	15-30	---	5.6-7.8
	12-31	20-40	---	5.6-7.8
	31-35	---	---	---
Mimosa----------	0-3	---	9.0-16	4.5-6.0
	3-10	---	13-25	4.5-6.0
	10-45	---	15-30	4.5-6.0
	45-49	---	---	---
GmE:				
Gladdice--------	0-8	10-15	---	5.6-7.8
	8-12	15-30	---	5.6-7.8
	12-31	20-40	---	5.6-7.8
	31-35	---	---	---
Mimosa----------	0-3	---	9.0-16	4.5-6.0
	3-10	---	13-25	4.5-6.0
	10-45	---	15-30	4.5-6.0
	45-49	---	---	---
Gu:				
Guthrie---------	0-14	---	5.0-15	3.6-5.5
	14-30	---	5.0-15	3.6-5.5
	30-60	---	8.0-20	3.6-5.5
HaC2:				
Hampshire-------	0-6	---	10-15	4.5-6.0
	6-58	---	15-30	4.5-6.0
	58-60	---	---	---
HaC3:				
Hampshire-------	0-4	---	12-20	4.5-6.0
	4-42	---	15-30	4.5-6.0
	42-50	---	10-15	4.5-6.0
	50-60	---	---	---
HaD3:				
Hampshire-------	0-4	---	12-20	4.5-6.0
	4-42	---	15-30	4.5-6.0
	42-50	---	10-15	4.5-6.0
	50-60	---	---	---
HgD:				
Hampshire-------	0-4	---	12-20	4.5-6.0
	4-42	---	15-30	4.5-6.0
	42-50	---	10-15	4.5-6.0
	50-60	---	---	---
Gullied land.				
HsF:				
Hawthorne-------	0-12	---	5.0-15	4.0-5.5
	12-26	---	5.0-15	4.0-5.5
	26-60	---	---	---

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100g	meq/100g	pH
HsF:				
Sulphura--------	0-4	5.0-10	---	5.1-6.0
	4-21	5.0-10	---	5.1-6.0
	21-25	---	---	---
	25-29	---	---	---
HuA:				
Humphreys-------	0-9	---	5.0-15	4.5-6.0
	9-39	---	5.0-12	4.5-6.0
	39-60	---	5.0-10	4.5-6.0
HuB:				
Humphreys-------	0-9	---	5.0-15	4.5-6.0
	9-39	---	5.0-12	4.5-6.0
	39-60	---	5.0-10	4.5-6.0
LaB:				
Lax-------------	0-10	---	5.0-15	4.5-6.5
	10-27	---	5.0-15	4.5-5.5
	27-50	---	5.0-15	4.5-5.5
	50-60	---	12-25	4.5-5.5
LaC:				
Lax-------------	0-10	---	5.0-15	4.5-6.5
	10-27	---	5.0-15	4.5-5.5
	27-50	---	5.0-15	4.5-5.5
	50-60	---	12-25	4.5-5.5
Ln:				
Lindside--------	0-12	12-18	---	6.0-7.0
	12-60	12-20	---	6.0-7.0
Lo:				
Lobelville------	0-6	5.0-15	---	4.5-6.0
	6-19	5.0-10	---	4.5-6.0
	19-38	5.0-10	---	4.5-6.0
	38-60	5.0-10	---	4.5-6.0
Me:				
Melvin----------	0-6	5.0-15	---	5.6-7.0
	6-46	5.0-15	---	5.6-7.0
	46-60	5.0-15	---	5.6-7.0
MnD:				
Minvale---------	0-6	---	5.0-15	4.5-5.5
	6-30	---	5.0-15	4.5-5.5
	30-60	---	12-20	4.5-5.5
MsD3:				
Minvale---------	0-5	---	5.0-15	4.5-5.5
	5-28	---	5.0-12	4.5-5.5
	28-60	---	12-20	---
MtB:				
Mountview-------	0-6	---	5.0-15	4.5-5.5
	6-35	---	10-18	4.5-5.5
	35-60	---	15-25	4.5-5.5

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100g	meq/100g	pH
Nr:				
Norene----------	0-18	5.0-10	---	5.6-7.0
	18-53	5.0-20	---	5.6-7.0
	53-60	5.0-20	---	5.6-7.0
PaB:				
Paden-----------	0-6	---	8.0-15	4.5-5.5
	6-25	---	8.0-15	4.5-5.5
	25-41	---	8.0-15	4.5-5.5
	41-60	---	15-25	4.5-5.5
PaC2:				
Paden-----------	0-4	---	8.0-15	4.5-5.5
	4-23	---	8.0-15	4.5-5.5
	23-41	---	8.0-15	4.5-5.5
	41-60	---	15-25	4.5-5.5
PkB:				
Pickwick--------	0-8	---	8.0-15	4.5-5.5
	8-41	---	8.0-15	4.5-5.5
	41-118	---	15-25	4.5-5.5
PkC2:				
Pickwick--------	0-7	---	8.0-15	4.5-5.5
	7-36	---	8.0-15	4.5-5.5
	36-60	---	15-25	4.5-5.5
PkC3:				
Pickwick--------	0-2	---	8.0-15	4.5-5.5
	2-40	---	8.0-15	4.5-5.5
	40-60	---	15-25	4.5-5.5
Ra:				
Riverby---------	0-12	3.0-6.0	---	5.1-7.3
	12-60	3.0-6.0	---	5.1-7.3
SaD:				
Saffell---------	0-4	---	5.0-15	4.5-5.5
	4-13	---	5.0-20	4.5-5.5
	13-37	---	10-20	4.5-5.5
	37-60	---	5.0-15	4.5-5.5
SaF:				
Saffell---------	0-4	---	5.0-15	4.5-5.5
	4-13	---	5.0-20	4.5-5.5
	13-37	---	10-20	4.5-5.5
	37-60	---	5.0-15	4.5-5.5
SeC:				
Sengtown--------	0-10	---	5.0-15	4.5-6.0
	10-18	---	5.0-15	4.5-6.0
	18-60	---	15-25	4.5-6.0
SeD2:				
Sengtown--------	0-6	---	5.0-15	4.5-6.0
	6-18	---	5.0-15	4.5-6.0
	18-60	---	15-25	4.5-6.0

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100g	meq/100g	pH
SeF:				
Sengtown--------	0-10	---	5.0-15	4.5-6.0
	10-18	---	5.0-15	4.5-6.0
	18-60	---	15-25	4.5-6.0
SmC2:				
Sengtown--------	0-6	---	5.0-15	4.5-6.0
	6-18	---	5.0-15	4.5-6.0
	18-60	---	15-25	4.5-6.0
Mountview-------	0-6	---	5.0-15	4.5-5.5
	6-24	---	10-18	4.5-5.5
	24-60	---	15-25	4.5-5.5
SrF:				
Sengtown--------	0-10	---	5.0-15	4.5-6.0
	10-18	---	5.0-15	4.5-6.0
	18-60	---	15-25	4.5-6.0
Rock outcrop.				
Su:				
Sullivan--------	0-56	5.0-15	---	5.6-7.2
	56-60	5.0-10	---	5.6-7.2
ThC2:				
Tarklin---------	0-6	---	5.0-15	3.6-5.5
	6-35	---	8.0-20	3.6-5.5
	35-60	---	8.0-20	3.6-5.5
Humphreys-------	0-5	---	5.0-15	4.5-6.0
	5-58	---	5.0-12	4.5-6.0
	58-60	---	5.0-10	4.5-6.0
TrA:				
Trace-----------	0-8	5.0-10	---	5.1-6.0
	8-36	5.0-10	---	5.1-6.0
	36-41	5.0-10	---	5.1-6.0
	41-60	5.0-10	---	5.1-6.0
TrB:				
Trace-----------	0-8	5.0-10	---	5.1-6.0
	8-36	5.0-10	---	5.1-6.0
	36-41	5.0-10	---	5.1-6.0
	41-60	5.0-10	---	5.1-6.0
Ua.				
Udarents				
Ud.				
Udarents				
W.				
Water				
Wm:				
Woodmont--------	0-9	5.0-10	---	5.1-6.0
	9-22	5.0-20	---	5.1-6.0
	22-60	5.0-20	---	5.1-6.6

Table 17.—Soil Features

Map symbol and soil name	Restrictions: Depth	Restrictions: Kind	Restrictions: Thickness	Restrictions: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
	In		In				
AmB:							
Armour----------	---	---	---	---	None	Moderate	Moderate
AmC:							
Armour----------	---	---	---	---	None	Moderate	Moderate
AmC3:							
Armour----------	---	---	---	---	None	Moderate	Moderate
An:							
Arrington-------	---	---	---	---	None	Low	Low
BaF:							
Barfield--------	8-20	Bedrock (lithic)	>60	Indurated	None	High	Low
Rock outcrop.							
BbC:							
Biffle----------	20-40	Bedrock (paralithic)	>60	Strong	None	Moderate	High
BbD:							
Biffle----------	20-40	Bedrock (paralithic)	>60	Strong	None	Moderate	High
BbF:							
Biffle----------	20-40	Bedrock (paralithic)	>60	Strong	None	Moderate	High
DeC2:							
Dellrose--------	---	---	---	---	None	High	Moderate
DeD2:							
Dellrose--------	---	---	---	---	None	High	Moderate
DkB:							
Dickson---------	18-36	Fragipan	20-40	Weak	None	High	Moderate
Eg:							
Egam------------	---	---	---	---	None	High	Low
GmC:							
Gladdice--------	20-40	Bedrock (lithic)	>60	Indurated	None	High	Low
Mimosa----------	40-60	Bedrock (lithic)	>60	Indurated	None	High	Moderate

Table 17.—Soil Features—Continued

Map symbol and soil name	Restrictions				Potential frost action	Risk of corrosion	
	Depth	Kind	Thickness	Hardness		Uncoated steel	Concrete
	In		In				
GmE:							
Gladdice--------	20-40	Bedrock (lithic)	>60	Indurated	None	High	Low
Mimosa----------	40-60	Bedrock (lithic)	>60	Indurated	None	High	Moderate
Gu:							
Guthrie---------	20-40	Fragipan	30-50	Weak	None	High	High
HaC2:							
Hampshire-------	40-60	Bedrock (paralithic)	>60	Strong	None	High	Moderate
HaC3:							
Hampshire-------	40-60	Bedrock (paralithic)	>60	Strong	None	High	Moderate
HaD3:							
Hampshire-------	40-60	Bedrock (paralithic)	>60	Strong	None	High	Moderate
HgD:							
Hampshire-------	40-60	Bedrock (paralithic)	>60	Strong	None	High	Moderate
Gullied land.							
HsF:							
Hawthorne-------	20-40	Bedrock (paralithic)	---	Strong	None	Low	High
Sulphura--------	20-40	Bedrock (lithic)	---	Indurated	None	Low	Moderate
HuA:							
Humphreys-------	---	---	---	---	None	Moderate	Moderate
HuB:							
Humphreys-------	---	---	---	---	None	Moderate	Moderate
LaB:							
Lax-------------	18-36	Fragipan	20-40	Moderate	None	High	Moderate
LaC:							
Lax-------------	18-36	Fragipan	20-40	Moderate	None	High	Moderate
Ln:							
Lindside--------	---	---	---	---	None	Moderate	Low

Table 17.—Soil Features—Continued

Map symbol and soil name	Restrictions: Depth	Restrictions: Kind	Restrictions: Thickness	Restrictions: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
	In		In				
Lo:							
Lobelville------	---	---	---	---	None	High	Moderate
Me:							
Melvin----------	---	---	---	---	None	High	Low
MnD:							
Minvale---------	---	---	---	---	None	Moderate	Low
MsD3:							
Minvale---------	---	---	---	---	None	Moderate	Low
MtB:							
Mountview-------	---	---	---	---	None	Moderate	Moderate
Nr:							
Norene----------	---	---	---	---	None	High	Low
PaB:							
Paden-----------	18-36	Fragipan	20-40	Weak	None	High	Moderate
PaC2:							
Paden-----------	18-36	Fragipan	20-40	Weak	None	High	Moderate
PkB:							
Pickwick--------	---	---	---	---	None	Moderate	Moderate
PkC2:							
Pickwick--------	---	---	---	---	None	Moderate	Moderate
PkC3:							
Pickwick--------	---	---	---	---	None	Moderate	Moderate
Ra:							
Riverby---------	---	---	---	---	None	Low	Moderate
SaD:							
Saffell---------	---	---	---	---	None	Low	Moderate
SaF:							
Saffell---------	---	---	---	---	None	Low	Moderate
SeC:							
Sengtown--------	---	---	---	---	None	High	Moderate
SeD2:							
Sengtown--------	---	---	---	---	None	High	Moderate

Table 17.—Soil Features—Continued

Map symbol and soil name	Restrictions				Potential frost action	Risk of corrosion	
	Depth	Kind	Thickness	Hardness		Uncoated steel	Concrete
	In		In				
SeF:							
Sengtown--------	---	---	---	---	None	High	Moderate
SmC2:							
Sengtown--------	---	---	---	---	None	High	Moderate
Mountview-------	---	---	---	---	None	Moderate	Moderate
SrF:							
Sengtown--------	---	---	---	---	None	High	Moderate
Rock outcrop.							
Su:							
Sullivan--------	---	---	---	---	None	Low	Low
ThC2:							
Tarklin---------	20-40	Fragipan	30-60	Moderate	None	Moderate	High
Humphreys-------	---	---	---	---	None	Moderate	Moderate
TrA:							
Trace-----------	60-99	---	---	---	None	Low	Moderate
TrB:							
Trace-----------	60-99	---	---	---	None	Low	Moderate
Ua. Udarents							
Ud. Udarents							
W. Water							
Wm:							
Woodmont--------	20-36	Fragipan	40-60	Weak	None	High	Moderate

Table 18.—Flooding Frequency and Duration

Map symbol and soil name	January	February	March	April	May	June	July	August	September	October	November	December
AmB:												
Armour	None	None	None	None	None	None	None	None	None	None	None	None
AmC:												
Armour	None	None	None	None	None	None	None	None	None	None	None	None
AmC3:												
Armour	None	None	None	None	None	None	None	None	None	None	None	None
An:												
Arrington	Freq. Brief or vr. brief	Freq. Brief or vr. brief	Freq. Brief or vr. brief	Freq. Brief or vr. brief	Freq. Brief or vr. brief	None	None	None	None	None	None	Freq. Brief or vr. brief
BaF:												
Barfield	None	None	None	None	None	None	None	None	None	None	None	None
Rock outcrop.												
BbC:												
Biffle	None	None	None	None	None	None	None	None	None	None	None	None
BbD:												
Biffle	None	None	None	None	None	None	None	None	None	None	None	None
BbF:												
Biffle	None	None	None	None	None	None	None	None	None	None	None	None
DeC2:												
Dellrose	None	None	None	None	None	None	None	None	None	None	None	None
DeD2:												
Dellrose	None	None	None	None	None	None	None	None	None	None	None	None
DkB:												
Dickson	None	None	None	None	None	None	None	None	None	None	None	None
Eg:												
Egam	Freq. Brief or vr. brief	Freq. Brief or vr. brief	Freq. Brief or vr. brief	Freq. Brief or vr. brief	Freq. Brief or vr. brief	None	None	None	None	None	None	Freq. Brief or vr. brief
GmC:												
Gladdice	None	None	None	None	None	None	None	None	None	None	None	None
Mimosa	None	None	None	None	None	None	None	None	None	None	None	None
GmE:												
Gladdice	None	None	None	None	None	None	None	None	None	None	None	None
Mimosa	None	None	None	None	None	None	None	None	None	None	None	None

Table 18.—Flooding Frequency and Duration—Continued

Map symbol and soil name	January	February	March	April	May	June	July	August	September	October	November	December
Gu:												
Guthrie------	None	None	None	None	None	None	None	None	None	None	None	None
HaC2:												
Hampshire----	None	None	None	None	None	None	None	None	None	None	None	None
HaC3:												
Hampshire----	None	None	None	None	None	None	None	None	None	None	None	None
HaD3:												
Hampshire----	None	None	None	None	None	None	None	None	None	None	None	None
HgD:												
Hampshire----	None	None	None	None	None	None	None	None	None	None	None	None
Gullied land.												
HsF:												
Hawthorne----	None	None	None	None	None	None	None	None	None	None	None	None
Sulphura-----	None	None	None	None	None	None	None	None	None	None	None	None
HuA:												
Humphreys----	Occas. Brief	Occas. Brief	Occas. Brief	None	None	None	None	None	None	None	None	Occas. Brief
HuB:												
Humphreys----	None	None	None	None	None	None	None	None	None	None	None	None
LaB:												
Lax----------	None	None	None	None	None	None	None	None	None	None	None	None
LaC:												
Lax----------	None	None	None	None	None	None	None	None	None	None	None	None
Ln:												
Lindside-----	Freq. Brief	Freq. Brief	Freq. Brief	Freq. Brief	Freq. Brief	None	None	None	None	None	None	Freq. Brief
Lo:												
Lobelville---	Occas. Brief	Occas. Brief	Occas. Brief	Occas. Brief	None	None	None	None	None	None	None	Occas. Brief
Me:												
Melvin-------	Freq. Long	Freq. Long	Freq. Long	Freq. Long	Freq. Long	None	None	None	None	None	None	Freq. Long
MnD:												
Minvale------	None	None	None	None	None	None	None	None	None	None	None	None
MsD3:												
Minvale------	None	None	None	None	None	None	None	None	None	None	None	None

Table 18.—Flooding Frequency and Duration—Continued

Map symbol and soil name	January	February	March	April	May	June	July	August	September	October	November	December
MtB:												
Mountview----	None	None	None	None	None	None	None	None	None	None	None	None
Nr:												
Norene-------	Rare Brief	Rare Brief	Rare Brief	None	None	None	None	None	None	None	None	Rare Brief
PaB:												
Paden--------	None	None	None	None	None	None	None	None	None	None	None	None
PaC2:												
Paden--------	None	None	None	None	None	None	None	None	None	None	None	None
PkB:												
Pickwick-----	None	None	None	None	None	None	None	None	None	None	None	None
PkC2:												
Pickwick-----	None	None	None	None	None	None	None	None	None	None	None	None
PkC3:												
Pickwick-----	None	None	None	None	None	None	None	None	None	None	None	None
Ra:												
Riverby------	Freq. Brief or vr. brief	Freq. Brief or vr. brief	Freq. Brief or vr. brief	Freq. Brief or vr. brief	Freq. Brief or vr. brief	Freq. Brief or vr. brief	None	None	None	None	Freq. Brief or vr. brief	Freq. Brief or vr. brief
SaD:												
Saffell------	None	None	None	None	None	None	None	None	None	None	None	None
SaF:												
Saffell------	None	None	None	None	None	None	None	None	None	None	None	None
SeC:												
Sengtown-----	None	None	None	None	None	None	None	None	None	None	None	None
SeD2:												
Sengtown-----	None	None	None	None	None	None	None	None	None	None	None	None
SeF:												
Sengtown-----	None	None	None	None	None	None	None	None	None	None	None	None
SmC2:												
Sengtown-----	None	None	None	None	None	None	None	None	None	None	None	None
Mountview----	None	None	None	None	None	None	None	None	None	None	None	None
SrF:												
Sengtown-----	None	None	None	None	None	None	None	None	None	None	None	None
Rock outcrop.												

Table 18.—Flooding Frequency and Duration—Continued

Map symbol and soil name	January	February	March	April	May	June	July	August	September	October	November	December
Su:												
Sullivan-----	Occas. Brief or vr. brief	Occas. Brief or vr. brief	Occas. Brief or vr. brief	None	None	None	None	None	None	None	None	Occas. Brief or vr. brief
ThC2:												
Tarklin------	None	None	None	None	None	None	None	None	None	None	None	None
Humphreys----	None	None	None	None	None	None	None	None	None	None	None	None
TrA:												
Trace--------	Occas. Brief or vr. brief	Occas. Brief or vr. brief	Occas. Brief or vr. brief	Occas. Brief or vr. brief	None	None	None	None	None	None	Occas. Brief or vr. brief	Occas. Brief or vr. brief
TrB:												
Trace--------	Rare Brief or vr. brief	Rare Brief or vr. brief	Rare Brief or vr. brief	Rare Brief or vr. brief	Rare Brief or vr. brief	None	None	None	None	None	None	Rare Brief or vr. brief
Ua. Udarents												
Ud. Udarents												
W. Water												
Wm:												
Woodmont-----	Rare Brief	Rare Brief	Rare Brief	Rare Brief	Rare Brief	None	None	None	None	None	None	Rare Brief

Table 19.—Ponding Frequency, Duration, and Depth

(Depths of ponding are in feet)

Map symbol and soil name	January	February	March	April	May	June	July	August	September	October	November	December
AmB:												
Armour	---	---	---	---	---	---	---	---	---	---	---	---
AmC:												
Armour	---	---	---	---	---	---	---	---	---	---	---	---
AmC3:												
Armour	---	---	---	---	---	---	---	---	---	---	---	---
An:												
Arrington	---	---	---	---	---	---	---	---	---	---	---	---
BaF:												
Barfield	---	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop	---	---	---	---	---	---	---	---	---	---	---	---
BbC:												
Biffle	---	---	---	---	---	---	---	---	---	---	---	---
BbD:												
Biffle	---	---	---	---	---	---	---	---	---	---	---	---
BbF:												
Biffle	---	---	---	---	---	---	---	---	---	---	---	---
DeC2:												
Dellrose	---	---	---	---	---	---	---	---	---	---	---	---
DeD2:												
Dellrose	---	---	---	---	---	---	---	---	---	---	---	---
DkB:												
Dickson	---	---	---	---	---	---	---	---	---	---	---	---
Eg:												
Egam	---	---	---	---	---	---	---	---	---	---	---	---
GmC:												
Gladdice	---	---	---	---	---	---	---	---	---	---	---	---
Mimosa	---	---	---	---	---	---	---	---	---	---	---	---
GmE:												
Gladdice	---	---	---	---	---	---	---	---	---	---	---	---
Mimosa	---	---	---	---	---	---	---	---	---	---	---	---

Table 19.—Ponding Frequency, Duration, and Depth—Continued

Map symbol and soil name	January	February	March	April	May	June	July	August	September	October	November	December
Gu:												
Guthrie	Long Depth: 0.0-2.0	Long Depth: 0.0-2.0	Long Depth: 0.0-2.0	Long Depth: 0.0-2.0	Long Depth: 0.0-2.0	---	---	---	---	---	---	Long Depth: 0.0-2.0
HaC2:												
Hampshire	---	---	---	---	---	---	---	---	---	---	---	---
HaC3:												
Hampshire	---	---	---	---	---	---	---	---	---	---	---	---
HaD3:												
Hampshire	---	---	---	---	---	---	---	---	---	---	---	---
HgD:												
Hampshire	---	---	---	---	---	---	---	---	---	---	---	---
Gullied land	---	---	---	---	---	---	---	---	---	---	---	---
HsF:												
Hawthorne	---	---	---	---	---	---	---	---	---	---	---	---
Sulphura	---	---	---	---	---	---	---	---	---	---	---	---
HuA:												
Humphreys	---	---	---	---	---	---	---	---	---	---	---	---
HuB:												
Humphreys	---	---	---	---	---	---	---	---	---	---	---	---
LaB:												
Lax	---	---	---	---	---	---	---	---	---	---	---	---
LaC:												
Lax	---	---	---	---	---	---	---	---	---	---	---	---
Ln:												
Lindside	---	---	---	---	---	---	---	---	---	---	---	---
Lo:												
Lobelville	---	---	---	---	---	---	---	---	---	---	---	---
Me:												
Melvin	---	---	---	---	---	---	---	---	---	---	---	---
MnD:												
Minvale	---	---	---	---	---	---	---	---	---	---	---	---
MsD3:												
Minvale	---	---	---	---	---	---	---	---	---	---	---	---

Table 19.—Ponding Frequency, Duration, and Depth—Continued

Map symbol and soil name	January	February	March	April	May	June	July	August	September	October	November	December
MtB:												
Mountview-------	---	---	---	---	---	---	---	---	---	---	---	---
Nr:												
Norene----------	Long Depth: 0.0-2.0	Long Depth: 0.0-2.0	Long Depth: 0.0-2.0	Long Depth: 0.0-2.0	Long Depth: 0.0-2.0	---	---	---	---	---	Long Depth: 0.0-2.0	Long Depth: 0.0-2.0
PaB:												
Paden-----------	---	---	---	---	---	---	---	---	---	---	---	---
PaC2:												
Paden-----------	---	---	---	---	---	---	---	---	---	---	---	---
PkB:												
Pickwick--------	---	---	---	---	---	---	---	---	---	---	---	---
PkC2:												
Pickwick--------	---	---	---	---	---	---	---	---	---	---	---	---
PkC3:												
Pickwick--------	---	---	---	---	---	---	---	---	---	---	---	---
Ra:												
Riverby---------	---	---	---	---	---	---	---	---	---	---	---	---
SaD:												
Saffell---------	---	---	---	---	---	---	---	---	---	---	---	---
SaF:												
Saffell---------	---	---	---	---	---	---	---	---	---	---	---	---
SeC:												
Sengtown--------	---	---	---	---	---	---	---	---	---	---	---	---
SeD2:												
Sengtown--------	---	---	---	---	---	---	---	---	---	---	---	---
SeF:												
Sengtown--------	---	---	---	---	---	---	---	---	---	---	---	---
SmC2:												
Sengtown--------	---	---	---	---	---	---	---	---	---	---	---	---
Mountview-------	---	---	---	---	---	---	---	---	---	---	---	---
SrF:												
Sengtown--------	---	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	---	---	---	---	---	---	---	---	---	---	---	---

Table 19.—Ponding Frequency, Duration, and Depth—Continued

Map symbol and soil name	January	February	March	April	May	June	July	August	September	October	November	December
Su:												
Sullivan	---	---	---	---	---	---	---	---	---	---	---	---
ThC2:												
Tarklin	---	---	---	---	---	---	---	---	---	---	---	---
Humphreys	---	---	---	---	---	---	---	---	---	---	---	---
TrA:												
Trace	---	---	---	---	---	---	---	---	---	---	---	---
TrB:												
Trace	---	---	---	---	---	---	---	---	---	---	---	---
Ua:												
Udarents	---	---	---	---	---	---	---	---	---	---	---	---
Ud:												
Udarents	---	---	---	---	---	---	---	---	---	---	---	---
W:												
Water	---	---	---	---	---	---	---	---	---	---	---	---
Wm:												
Woodmont	---	---	---	---	---	---	---	---	---	---	---	---

Table 20.—Soil Moisture Status by Depth

(Absence of an entry indicates that the feature is not a concern or that data were not estimated. Termssuch as “moist” and “wet” are explained in the text. Depths of layers are in feet)

Map symbol and soil name	Hydro-logic group	January	February	March	April	May	June	July	August	September	October	November	December
AmB:													
Armour----------	B	---	---	---	---	---	---	---	---	---	---	---	---
AmC:													
Armour----------	B	---	---	---	---	---	---	---	---	---	---	---	---
AmC3:													
Armour----------	B	---	---	---	---	---	---	---	---	---	---	---	---
An:													
Arrington-------	B	0.0-5.0: Moist 5.0-6.0: Wet	0.0-5.0: Moist 5.0-6.0: Wet	0.0-5.0: Moist 5.0-6:0: Wet	---	---	---	---	---	---	---	---	---
BaF:													
Barfield--------	D	---	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	---	---	---	---	---	---	---	---	---	---	---	---	---
BbC:													
Biffle----------	B	---	---	---	---	---	---	---	---	---	---	---	---
BbD:													
Biffle----------	B	---	---	---	---	---	---	---	---	---	---	---	---
BbF:													
Biffle----------	B	---	---	---	---	---	---	---	---	---	---	---	---
DeC2:													
Dellrose--------	B	---	---	---	---	---	---	---	---	---	---	---	---
DeD2:													
Dellrose--------	B	---	---	---	---	---	---	---	---	---	---	---	---
DkB:													
Dickson---------	C	0.0-2.3: Wet 2.3-4.0: Moist 4.0-5.0: Dry	0.0-2.3: Wet 2.3-4.0: Moist 4.0-5.0: Dry	0.0-2.3: Wet 2.3-4.0: Moist 4.0-5.0: Dry	0.0-2.3: Wet 2.3-4.0: Moist 4.0-5.0: Dry	---	---	---	---	---	---	---	0.0-2.3: Wet 2.3-4.0: Moist 4.0-5.0: Dry
Eg:													
Egam------------	C	0.0-3.0: Moist 3.0-5.0: Wet	0.0-3.0: Moist 3.0-5.0: Wet	0.0-3.0: Moist 3.0-5.0: Wet	---	---	---	---	---	---	---	---	0.0-3.0: Moist 3.0-5.0: Wet

Table 20.—Soil Moisture Status by Depth—Continued

Map symbol and soil name	Hydro- logic group	January	February	March	April	May	June	July	August	September	October	November	December
GmC:													
Gladdice--------	C	---	---	---	---	---	---	---	---	---	---	---	---
Mimosa----------	C	---	---	---	---	---	---	---	---	---	---	---	---
GmE:													
Gladdice--------	C	---	---	---	---	---	---	---	---	---	---	---	---
Mimosa----------	C	---	---	---	---	---	---	---	---	---	---	---	---
Gu:													
Guthrie---------	D	0.0-6.0: Wet	0.0-6.0: Wet	0.0-6.0: Wet	0.0-6.0: Wet	0.0-6.0: Wet	---	---	---	---	---	---	0.0-6.0: Wet
HaC2:													
Hampshire-------	C	---	---	---	---	---	---	---	---	---	---	---	---
HaC3:													
Hampshire-------	C	---	---	---	---	---	---	---	---	---	---	---	---
HaD3:													
Hampshire-------	C	---	---	---	---	---	---	---	---	---	---	---	---
HgD:													
Hampshire-------	C	---	---	---	---	---	---	---	---	---	---	---	---
Gullied land----	---	---	---	---	---	---	---	---	---	---	---	---	---
HsF:													
Hawthorne-------	B	---	---	---	---	---	---	---	---	---	---	---	---
Sulphura--------	B	---	---	---	---	---	---	---	---	---	---	---	---
HuA:													
Humphreys-------	B	0.0-5.0: Dry 5.0-6.0: Wet	0.0-5.0: Dry 5.0-6.0: Wet	0.0-5.0: Dry 5.0-6.0: Wet	---	---	---	---	---	---	---	---	0.0-5.0: Dry 5.0-6.0: Wet
HuB:													
Humphreys-------	B	0.0-5.0: Dry 5.5-6.0: Wet	0.0-5.0: Dry 5.5-6.0: Wet	0.0-5.0: Dry 5.5-6.0: Wet	---	---	---	---	---	---	---	---	0.0-5.0: Dry 5.5-6.0: Wet
LaB:													
Lax-------------	C	0.0-2.3: Wet 2.3-4.2: Moist 4.0-5.0: Dry	0.0-2.3: Wet 2.3-4.2: Moist 4.0-5.0: Dry	0.0-2.3: Wet 2.3-4.2: Moist 4.0-5.0: Dry	---	---	---	---	---	---	---	---	0.0-2.3: Wet 2.3-4.2: Moist 4.2-5.0: Dry

Table 20.—Soil Moisture Status by Depth—Continued

Map symbol and soil name	Hydro-logic group	January	February	March	April	May	June	July	August	September	October	November	December
LaC:													
Lax-------------	C	0.0-2.3: Wet 2.3-4.2: Moist 4.2-5.0: Dry	0.0-2.3: Wet 2.3-4.2: Moist 4.2-5.0: Dry	0.0-2.3: Wet 2.3-4.2: Moist 4.2-5.0: Dry	---	---	---	---	---	---	---	---	0.0-2.3: Wet 2.3-4.2: Moist 4.2-5.0: Dry
Ln:													
Lindside--------	C	0.0-1.5: Moist 1.5-6.0: Wet	0.0-1.5: Moist 1.5-6.0: Wet	0.0-1.5: Moist 1.5-6.0: Wet	0.0-1.5: Moist 1.5-6.0 Wet	---	---	---	---	---	---	---	0.0-1.5: Moist 1.5-6.0: Wet
Lo:													
Lobelville------	C	0.0-2.0: Moist 2.0-6.0: Wet	0.0-2.0: Moist 2.0-6.0: Wet	0.0-2.0: Moist 2.0-6.0: Wet	0.0-2.0: Moist 2.0-6.0 Wet	---	---	---	---	---	---	---	0.0-2.0: Moist 2.0-6.0: Wet
Me:													
Melvin----------	D	0.0-5.0: Wet	0.0-5.0: Wet	0.0-5.0: Wet	0.0-5.0: Wet	0.0-5.0: Wet	---	---	---	---	---	0.0-5.0: Moist	0.0-5.0: Wet
MnD:													
Minvale---------	B	---	---	---	---	---	---	---	---	---	---	---	---
MsD3:													
Minvale---------	B	---	---	---	---	---	---	---	---	---	---	---	---
MtB:													
Mountview-------	B	---	---	---	---	---	---	---	---	---	---	---	---
Nr:													
Norene----------	D	0.0-6.0: Wet	0.0-6.0: Wet	0.0-6.0: Wet	0.0-6.0: Wet	0.0-6.0: Wet	---	---	---	---	---	0.0-6.0: Moist	0.0-6.0: Wet
PaB:													
Paden-----------	C	0.0-2.0: Wet 2.0-4.0: Moist 4.0-5.0: Dry	0.0-2.0: Wet 2.0-4.0: Moist 4.0-5.0: Dry	0.0-2.0: Wet 2.0-4.0: Moist 4.0-5.0: Dry	---	---	---	---	---	---	---	---	0.0-2.0: Wet 2.0-4.0: Moist 4.0-5.0: Dry
PaC2:													
Paden-----------	C	0.0-2.0: Wet 2.0-4.0: Moist 4.0-5.0: Dry	0.0-2.0: Wet 2.0-4.0: Moist 4.0-5.0: Dry	0.0-2.0: Wet 2.0-4.0: Moist 4.0-5.0: Dry	---	---	---	---	---	---	---	---	0.0-2.0: Wet 2.0-4.0: Moist 4.0-5.0: Dry

Table 20.—Soil Moisture Status by Depth—Continued

Map symbol and soil name	Hydro-logic group	January	February	March	April	May	June	July	August	September	October	November	December
PkB:													
Pickwick--------	B	---	---	---	---	---	---	---	---	---	---	---	---
PkC2:													
Pickwick--------	B	---	---	---	---	---	---	---	---	---	---	---	---
PkC3:													
Pickwick--------	B	---	---	---	---	---	---	---	---	---	---	---	---
Ra:													
Riverby---------	A	0.0-4.0: Dry 4.0-6.0: Wet	0.0-4.0: Dry 4.0-6.0: Wet	0.0-4.0: Dry 4.0-6.0: Wet	0.0-4.0: Dry 4.0-6.0: Wet	---	---	---	---	---	---	---	0.0-4.0: Dry 4.0-6.0: Wet
SaD:													
Saffell---------	B	---	---	---	---	---	---	---	---	---	---	---	---
SaF:													
Saffell---------	B	---	---	---	---	---	---	---	---	---	---	---	---
SeC:													
Sengtown--------	B	---	---	---	---	---	---	---	---	---	---	---	---
SeD2:													
Sengtown--------	B	---	---	---	---	---	---	---	---	---	---	---	---
SeF:													
Sengtown--------	B	---	---	---	---	---	---	---	---	---	---	---	---
SmC2:													
Sengtown--------	B	---	---	---	---	---	---	---	---	---	---	---	---
Mountview-------	B	---	---	---	---	---	---	---	---	---	---	---	---
SrF:													
Sengtown--------	B	---	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	B	---	---	---	---	---	---	---	---	---	---	---	---
Su:													
Sullivan--------	B	---	---	---	---	---	---	---	---	---	---	---	---
ThC2:													
Tarklin---------	C	0.0-3.0: Wet 3.0-6.0: Moist	0.0-3.0: Wet 3.0-6.0: Moist	0.0-3.0: Wet 3.0-6.0: Moist	0.0-3.0: Wet 3.0-6.0: Moist	---	---	---	---	---	---	---	0.0-3.0: Wet 3.0-6.0: Moist
Humphreys-------	B	0.0-5.0: Dry 5.0-6.0: Wet	0.0-5.0: Dry 5.0-6.0: Wet	0.0-5.0: Dry 5.0-6.0: Wet	0.0-5.0: Dry 5.0-6.0: Wet	---	---	---	---	---	---	---	0.0-5.0: Dry 5.0-6.0: Wet

Table 20.—Soil Moisture Status by Depth—Continued

Map symbol and soil name	Hydro- logic group	January	February	March	April	May	June	July	August	September	October	November	December
TrA:													
Trace-----------	B	---	---	---	---	---	---	---	---	---	---	---	---
TrB:													
Trace-----------	B	---	---	---	---	---	---	---	---	---	---	---	---
Ua.													
Udarents													
Ud.													
Udarents													
W.													
Water													
Wm:													
Woodmont--------	C	0.0-2.0: Wet 2.0-6.0: Moist	0.0-2.0: Wet 2.0-6.0: Moist	0.0-2.0: Wet 2.0-6.0: Moist	0.0-2.0: Moist 2.0-6.0: Dry	---	---	---	---	---	---	0.0-2.0: Moist 2.0-6.0: Dry	0.0-2.0: Wet 2.0-6.0: Moist

Table 21.—Physical Analyses of Selected Soils

(TR means trace. Dashes indicate that analyses were not made. Analyses were made by the National Soil Survey Laboratory unless otherwise indicated)

Soil name and sample number	Horizon	Depth	Partical-size distribution: Sand: Very coarse (2-1 mm)	Coarse (1-0.5 mm)	Medium (0.5-0.25 mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.5 mm)	Total (2.0-0.5 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)	Fine clay (<0.0002 mm)	Percent of whole soil >2 mm	Bulk density (1/3 bar)
		In	Pct										g/cc
Lobelville*:													
S91TN81001-1	Ap	0-6	2.0	1.7	0.7	1.9	2.6	8.9	71.0	20.1	9.6	8	---
-2	Bw1	6-12	2.8	1.4	0.7	1.7	2.3	8.9	69.0	22.1	10.2	9	---
-3	Bw2	12-19	3.5	1.8	1.0	2.1	2.9	11.3	68.7	20.0	9.6	13	---
-4	Bw3	19-26	3.9	2.2	1.1	5.2	0.6	13.0	74.0	13.0	7.0	21	---
-5	Bg	26-38	0.6	0.7	0.5	2.4	6.9	11.1	70.0	18.9	8.5	31	---
-6	Cg1	38-52	11.8	8.7	4.3	3.5	2.3	30.6	49.2	20.2	9.9	81	---
-7	Cg2	52-60	26.5	16.2	11.0	14.4	2.1	70.2	15.0	14.8	8.9	92	---
Pickwick:													
S91TN-081-001-1	Ap1	0-4	0.3	0.9	1.5	3.1	3.2	9.0	73.5	17.5	8.6	TR	1.26
-2	Ap2	4-8	0.2	0.7	2.0	3.4	3.2	9.5	72.6	17.9	7.3	---	1.42
-3	Bt1	8-16	0.2	0.4	1.0	1.7	1.8	5.1	66.9	28.0	14.8	---	1.39
-4	Bt2	16-31	0.7	1.1	1.3	2.6	2.2	7.9	60.4	31.7	19.2	2	1.49
-5	Bt3	31-40	0.9	1.8	1.7	3.4	3.1	10.9	52.3	36.8	24.4	TR	1.50
-6	Bt4	40-59	0.3	0.9	1.5	3.3	3.0	9.0	45.9	45.1	33.2	7	1.57
-7	Bt5	59-79	0.6	1.1	1.5	3.2	2.8	9.2	47.9	42.9	30.9	---	1.61
-8	Bt6	79-118	0.3	1.0	1.6	3.5	3.4	9.8	37.8	52.4	41.2	2	---
Pickwick**:													
S91TN-081-004-1	Ap1	0-4	0.2	0.7	2.1	4.4	5.4	12.8	69.3	17.9	9.6	TR	1.45
-2	Ap2	4-7	0.3	0.7	1.7	4.0	5.4	12.1	69.3	18.6	9.6	TR	1.49
-3	Bt1	7-24	0.2	0.7	1.4	3.1	4.6	10.0	64.2	25.8	14.9	1	1.54
-4	Bt2	24-34	0.3	0.8	1.8	3.8	4.5	11.2	60.5	28.3	16.7	1	1.61
-5	Bt3	34-51	0.6	0.9	1.9	4.4	7.0	14.8	42.9	42.3	31.1	2	1.49
-6	Bt4	51-77	0.1	0.8	2.3	5.2	7.5	15.9	34.2	49.9	37.3	1	1.50
-7	Bt5	77-89	4.0	5.0	7.4	9.9	8.4	34.7	26.7	38.6	27.6	48	---

* Analyses by the Tennessee Agricultural Experiment Station Laboratory.
** Not the typical pedon.

Table 22.—Chemical Analyses of Selected Soils

(TR means trace. Dashes indicate that analyses were not made. Analyses were made by the National Soil Survey Laboratory unless otherwise indicated)

Soil name and sample number	Horizon	Depth	Organic carbon	Extractable phosphorus (Bray 1)	Ammonium acetate extractable bases: Ca	Mg	Na	K	Sum bases	Extractable acidity	Cation-exchange capacity: Sum of cations	NH_4OAc	Base saturation: NH_4OAc	Sum of cations	pH (H_2O 1:1)
		In	Pct	Pct	---Milliequivalents per 100 grams of soil----								------Pct------		
Lobelville*:															
S91TN81001-1	Ap	0-6	1.48	---	5.0	0.9	0.1	0.5	6.5	---	---	9.1	70	---	5.3
-2	AB	6-12	0.88	---	3.8	0.5	0.1	0.1	4.5	---	---	8.1	55	---	5.6
-3	Bw1	12-19	0.52	---	3.5	0.2	0.1	0.1	3.9	---	---	7.2	53	---	5.6
-4	Bw2	19-26	0.39	---	2.6	0.1	0.0	0.0	2.7	---	---	5.6	50	---	5.6
-5	Bg	26-38	0.36	---	2.5	0.1	0.1	0.1	2.8	---	---	6.0	45	---	4.9
-6	Cg1	38-52	0.42	---	3.5	0.1	0.1	0.0	3.7	---	---	7.0	52	---	5.2
-7	Cg2	52-80	0.26	---	2.8	0.1	0.1	0.1	3.1	---	---	6.6	47	---	4.8
Pickwick:															
S91TN-081-001-1	Ap1	0-4	2.47	8	5.7	1.4	0.1	1.0	0.2	6.6	14.8	12.0	68	55	5.9
-2	Ap2	4-8	0.82	4	2.9	0.5	0.1	0.1	3.6	5.7	9.3	7.8	46	39	5.7
-3	Bt1	8-16	0.31	2	4.2	0.9	0.1	---	5.2	5.0	10.2	9.8	53	51	5.8
-4	Bt2	16-31	0.13	1	2.1	1.6	0.1	---	3.8	8.0	11.8	11.2	34	32	5.2
-5	Bt3	31-40	0.11	2	0.6	1.5	0.1	---	2.2	10.9	13.1	10.7	21	17	4.9
-6	Bt4	40-59	0.08	3	0.7	1.9	0.1	0.1	2.8	12.5	15.3	11.6	24	18	4.9
-7	Bt5	59-79	0.09	6	0.6	1.9	0.1	TR	2.6	11.2	13.8	11.1	23	19	4.9
-8	Bt6	79-118	0.10	15	1.2	2.6	0.1	0.1	4.0	11.7	15.7	12.5	32	25	5.1
Pickwick**:															
S91TN-081-004-1	Ap1	0-4	1.04	49	1.7	0.4	---	0.1	2.2	8.2	10.4	8.9	25	21	4.9
-2	Ap2	4-7	0.95	40	1.7	0.3	---	---	2.0	8.1	10.1	8.4	24	20	5.1
-3	Bt1	7-24	0.21	59	4.0	0.8	---	TR	4.8	6.4	11.2	8.9	54	43	5.3
-4	Bt2	24-34	0.11	16	1.7	0.8	---	TR	2.5	8.7	11.2	9.3	27	22	5.0
-5	Bt3	34-51	0.10	7	1.2	0.8	---	0.1	2.1	14.0	16.1	13.6	15	13	4.7
-6	Bt4	51-77	0.09	13	1.4	0.7	---	0.1	2.2	16.5	18.7	17.0	13	12	4.7
-7	Bt5	77-89	0.08	62	2.6	1.0	---	0.1	3.7	15.6	19.3	16.1	23	19	4.7

* Analyses by the Tennessee Agricultural Experiment Station Laboratory.
** Not the typical pedon.

Table 23.—Classification of the Soils

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series)

Soil name	Family or higher taxonomic class
Armour	Fine-silty, mixed, thermic Ultic Hapludalfs
Arrington	Fine-silty, mixed, thermic Cumulic Hapludolls
Barfield	Clayey, mixed, thermic Lithic Hapludolls
Biffle	Fine-loamy, siliceous, thermic Typic Hapludults
Dellrose	Fine-loamy, mixed, thermic Typic Paleudults
Dickson	Fine-silty, siliceous, thermic Glossic Fragiudults
Egam	Fine, mixed, thermic Cumulic Hapludolls
Gladdice	Fine, mixed, thermic Vertic Hapludalfs
Guthrie	Fine-silty, siliceous, thermic Typic Fragiaquults
Hampshire	Fine, mixed, thermic Ultic Hapludalfs
Hawthorne	Loamy-skeletal, siliceous, thermic Ruptic-Ultic Dystrochrepts
*Humphreys	Fine-loamy, siliceous, thermic Humic Hapludults
Lax	Fine-silty, siliceous, thermic Typic Fragiudults
Lindside	Fine-silty, mixed, mesic Fluvaquentic Eutrochrepts
Lobelville	Fine-loamy, siliceous, thermic Fluvaquentic Dystrochrepts
Melvin	Fine-silty, mixed, nonacid, mesic Typic Fluvaquents
Mimosa	Fine, mixed, thermic Typic Hapludalfs
Minvale	Fine-loamy, siliceous, thermic Typic Paleudults
Mountview	Fine-silty, siliceous, thermic Typic Paleudults
Norene	Fine-silty, mixed, thermic Typic Epiaqualfs
Paden	Fine-silty, mixed, thermic Glossic Fragiudults
Pickwick	Fine-silty, mixed, thermic Typic Paleudults
Riverby	Loamy-skeletal, mixed, nonacid, thermic Typic Udifluvents
Saffell	Loamy-skeletal, siliceous, thermic Typic Hapludults
Sengtown	Fine, mixed, thermic Typic Paleudalfs
Sullivan	Fine-loamy, siliceous, thermic Dystric Fluventic Eutrochrepts
Sulphura	Loamy-skeletal, siliceous, thermic Ruptic-Alfic Dystrochrepts
Tarklin	Fine-loamy, siliceous, mesic Typic Fragiudults
Trace	Fine-silty, mixed, thermic Ultic Hapludalfs
Woodmont	Fine-silty, siliceous, thermic Glossaquic Fragiudalfs

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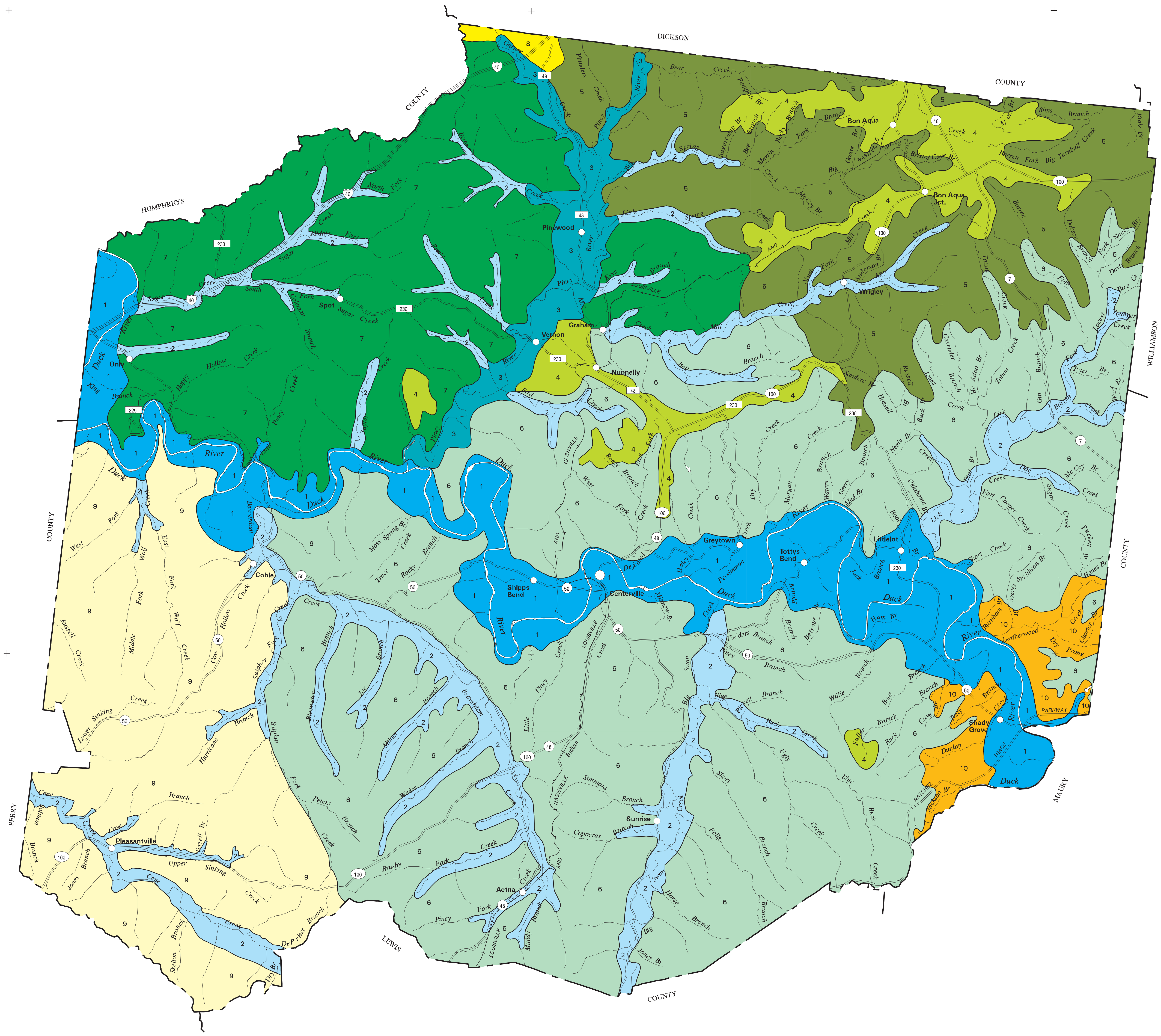


LEGEND

Dominantly Sloping to Nearly Level Soils on Stream Terraces, Footslopes, and Flood Plains

1 Pickwick-Armour-Arrington

2 Humphreys-Riverby-Tarklin

3 Pickwick

Dominantly Steep to Gently Sloping Soils on Uplands

4 Sengtown-Mountview-Dickson

5 Sengtown

6 Biffle-Sengtown

7 Biffle-Lax

8 Saffell-Lax

9 Biffle

10 Dellrose-Gladdice-Hampshire

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
TENNESSEE AGRICULTURAL EXPERIMENT STATION
HICKMAN COUNTY BOARD OF COMMISSIONERS
TENNESSEE DEPARTMENT OF AGRICULTURE

GENERAL SOIL MAP
HICKMAN COUNTY, TENNESSEE

N

1 0 1 2 3
MILES

1 0 1 2 3 4 5 6
KILOMETERS

SCALE = 1:110000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

INDEX TO MAP SHEETS
HICKMAN COUNTY, TENNESSEE

MILES
KILOMETERS
SCALE = 1:110000

SOIL LEGEND

Map symbols consist of a combination of letters and numbers. The first two letters are listed alphabetically and represent the kind of soil or soils in the map unit. A third capital letter indicates the slope class. Symbols without a slope letter are for nearly level soils or for areas of Udarents having a wide slope range. A number 2 following the slope letter indicates that the soil is moderately eroded, and a number 3 indicates that it is severely eroded.

SYMBOL	NAME
AmB	Armour silt loam, 2 to 5 percent slopes
AmC	Armour silt loam, 5 to 12 percent slopes
AmC3	Armour silty clay loam, 5 to 12 percent slopes, severely eroded
An	Arrington silt loam, frequently flooded
BaF	Barfield-Rock outcrop complex, 20 to 70 percent slopes
BbC	Biffle gravelly silt loam, 5 to 15 percent slopes
BbD	Biffle gravelly silt loam, 15 to 30 percent slopes
BbF	Biffle gravelly silt loam, 30 to 60 percent slopes
DeC2	Dellrose gravelly silt loam, 5 to 15 percent slopes, eroded
DeD2	Dellrose gravelly silt loam, 15 to 30 percent slopes, eroded
DkB	Dickson silt loam, 2 to 5 percent slopes
Eg	Egam silt loam, frequently flooded
GmC	Gladdice-Mimosa complex, 5 to 15 percent slopes, rocky
GmE	Gladdice-Mimosa complex, 15 to 40 percent slopes, very rocky
Gu	Guthrie silt loam, ponded
HaC2	Hampshire silt loam, 5 to 12 percent slopes, eroded
HaC3	Hampshire silty clay loam, 5 to 12 percent slopes, severely eroded
HaD3	Hampshire silty clay loam, 12 to 25 percent slopes, severely eroded
HgD	Hampshire-Gullied land complex, 12 to 30 percent slopes
HsF	Hawthorne-Sulphura association, steep
HuA	Humphreys gravelly silt loam, 0 to 2 percent slopes, occasionally flooded
HuB	Humphreys gravelly silt loam, 2 to 5 percent slopes
LaB	Lax silt loam, 2 to 5 percent slopes
LaC	Lax silt loam, 5 to 12 percent slopes
Ln	Lindside silt loam, frequently flooded
Lo	Lobelville silt loam, occasionally flooded
Me	Melvin silt loam, frequently flooded
MnD	Minvale gravelly silt loam, 12 to 20 percent slopes
MsD3	Minvale silty clay loam, 12 to 30 percent slopes, severely eroded
MtB	Mountview silt loam, 2 to 5 percent slopes
Nr	Norene silt loam, ponded
PaB	Paden silt loam, 1 to 5 percent slopes
PaC2	Paden silt loam, 5 to 12 percent slopes, eroded
PkB	Pickwick silt loam, 2 to 5 percent slopes
PkC2	Pickwick silt loam, 5 to 12 percent slopes, eroded
PkC3	Pickwick silty clay loam, 5 to 12 percent slopes, severely eroded
Ra	Riverby gravelly sandy loam, frequently flooded
SaD	Saffell gravelly fine sandy loam, 12 to 20 percent slopes
SaF	Saffell gravelly fine sandy loam, 20 to 60 percent slopes
SeC	Sengtown gravelly silt loam, 5 to 12 percent slopes
SeD2	Sengtown gravelly silt loam, 12 to 20 percent slopes, eroded
SeF	Sengtown gravelly silt loam, 20 to 60 percent slopes
SmC2	Sengtown-Mountview complex, 5 to 12 percent slopes, eroded
SrF	Sengtown-Rock outcrop complex, 20 to 60 percent slopes
Su	Sullivan silt loam, occasionally flooded
ThC2	Tarklin-Humphreys complex, 5 to 12 percent slopes, eroded
TrA	Trace silt loam, 0 to 2 percent slopes, occasionally flooded
TrB	Trace silt loam, 2 to 5 percent slopes, rarely flooded
Ua	Udarents, abandoned
Ud	Udarents, clayey
W	Water
Wm	Woodmont silt loam, rarely flooded

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state, or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline and neatline

AD HOC BOUNDARY (label) — Davis Airstrip

- Small airport, airfield, park, oilfield, cemetery, or flood pool — FLOOD POOL LINE

STATE COORDINATE TICK
1 890 000 FEET

LAND DIVISION CORNER
(sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM AND DESIGNATIONS

- Interstate — 173
- Federal — 287
- State — 52
- County, farm or ranch — 1283

RAILROAD

POWER TRANSMISSION LINE

PIPELINE

FENCE

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or Small (Named where applicable) — water

PITS — w

- Gravel pit
- Mine or quarry

CULTURAL FEATURES

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (occupied)
- Church
- School
- Indian mound (label) — Indian Mound
- Located object (label) — Tower
- Tank (label) — Gas
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial drain, double line
- Perennial drain, single line — Label only
- Intermittent drain — Label only
- Drainage end — Label only
- Canals or ditches — Label only
- Double-line (label) — CANAL
- Drainage and/or irrigation — Label only

LAKES, PONDS AND RESERVOIRS

- Perennial — water, w
- Intermittent — int, i

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS — AmB HuB

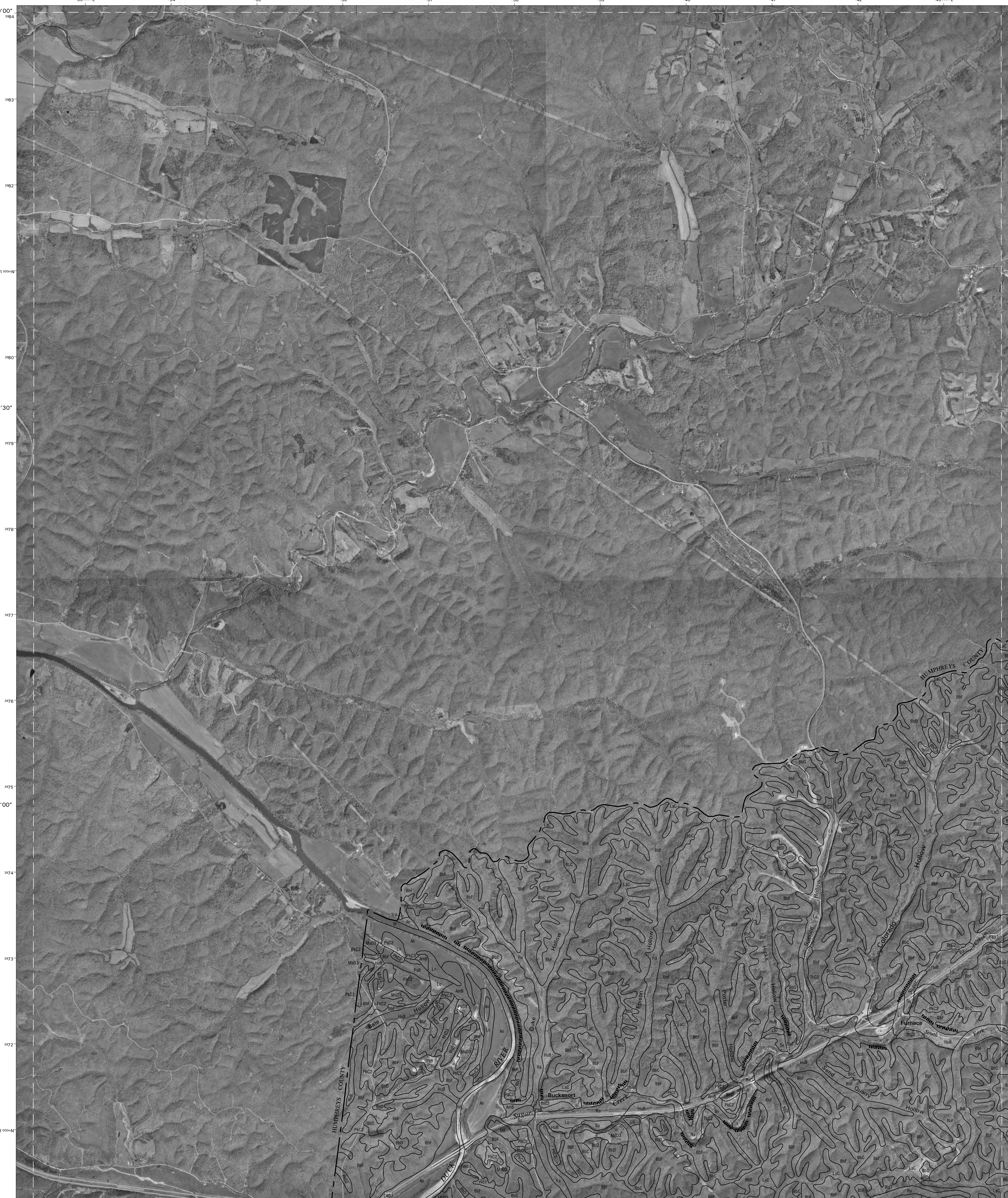
- Bedrock escarpment (points downslope)
- Other than bedrock escarpment (points downslope)
- Short steep slope
- Gully
- Depression or sink
- Soil sample

MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar nonsoil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
BUCKSNORT QUADRANGLE
SHEET NUMBER 1 OF 18



Joins sheet 6, Coble

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1992-1999. aerial photography.

North American Datum of 1983(NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

	■	2
	6	7

2 SPOT
6 COBLE
7 WHITFIELD

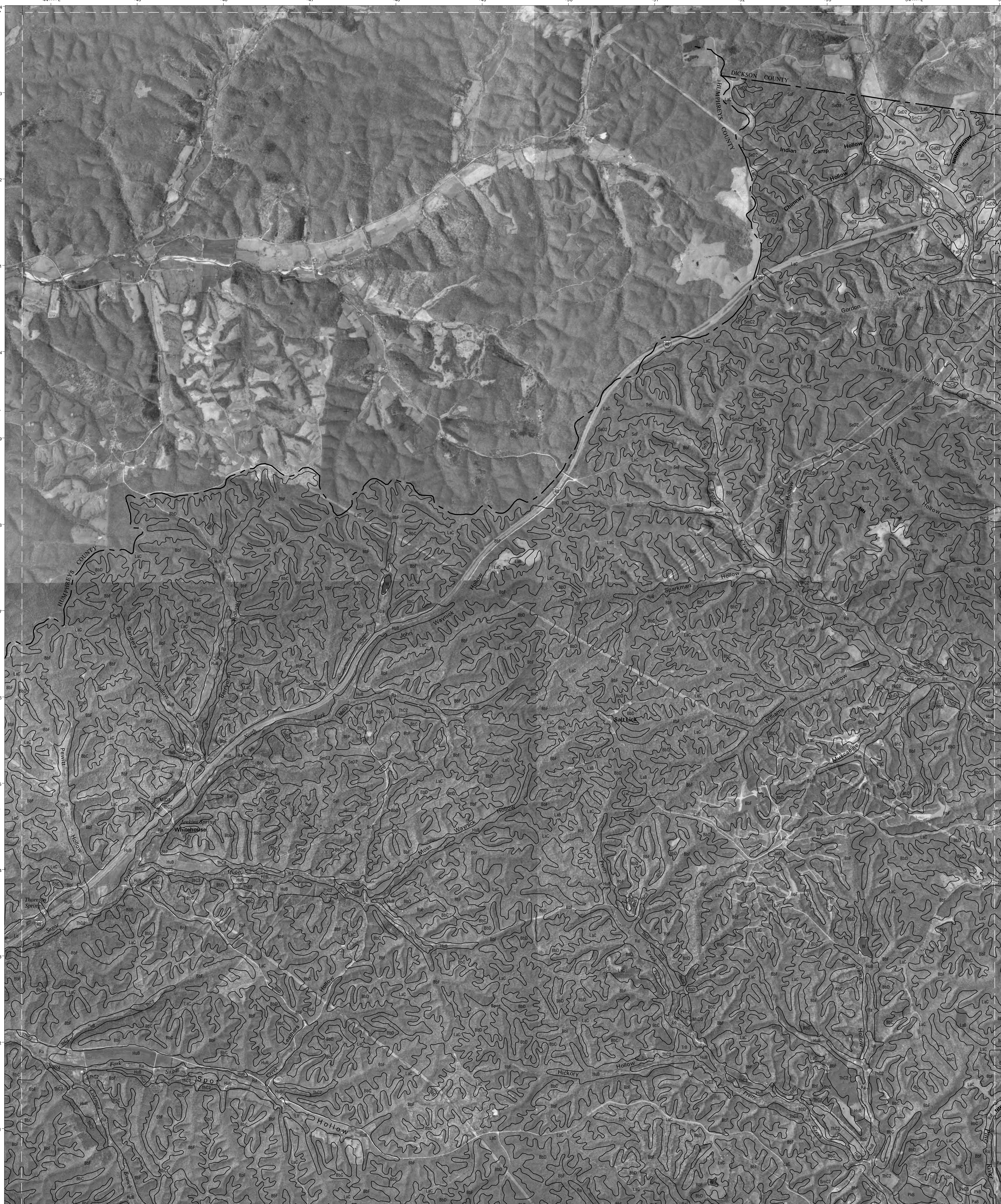
INDEX TO ADJOINING 7.5 MAPS

BUCKSNORT, TENNESSEE
7.5 MINUTE SERIES
SHEET NUMBER 1 OF 18

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
SPOT QUADRANGLE
SHEET NUMBER 2 OF 18



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North American Datum of 1983(NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

1		3
6	7	8

1 BUCKSNORT
3 TEXAS HOLLOW
6 COBLE
7 WHITFIELD
8 CENTERVILLE

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SPOT, TENNESSEE

7.5 MINUTE SERIES
SHEET NUMBER 2 OF 18

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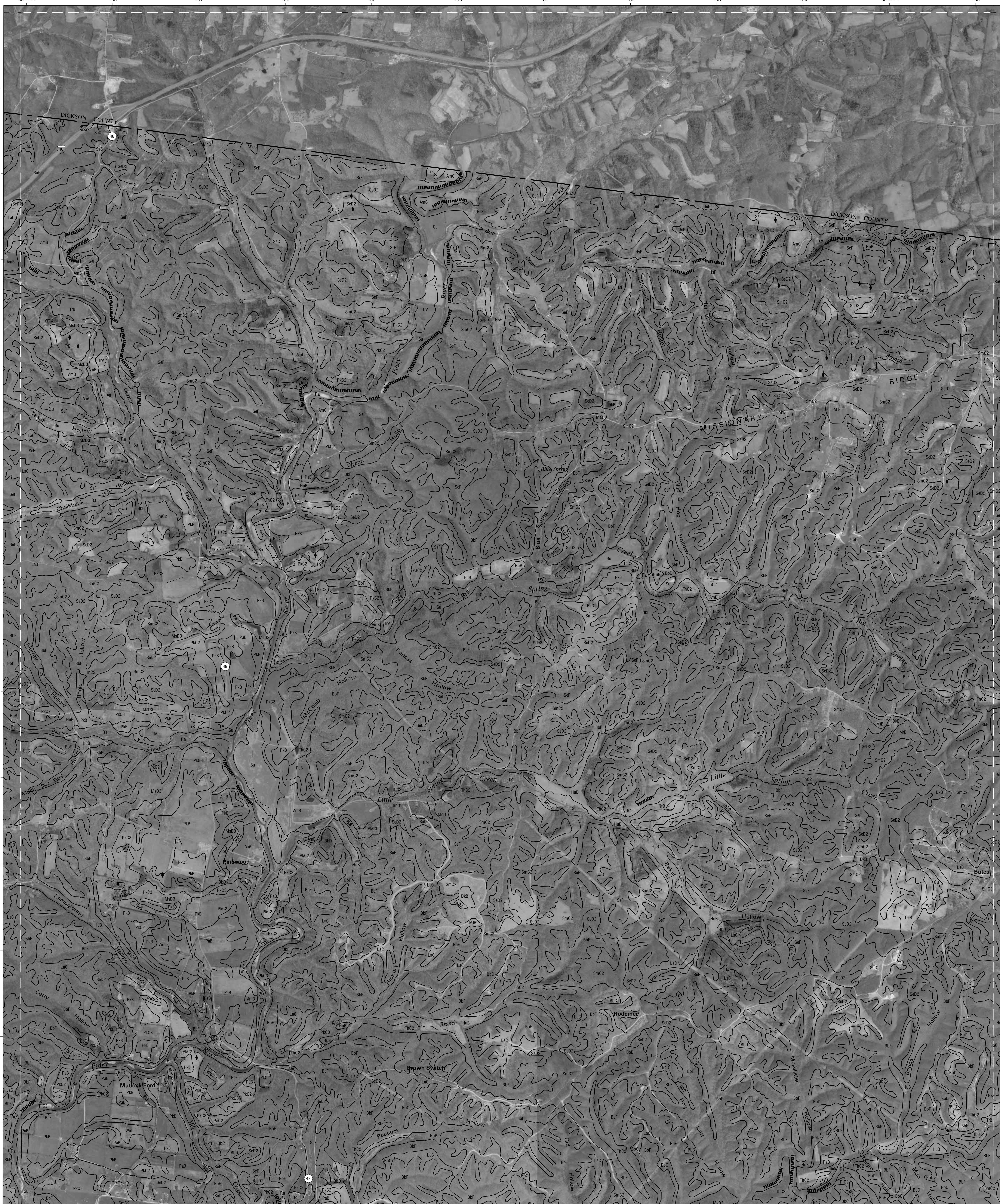
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
TEXAS HOLLOW QUADRANGLE
SHEET NUMBER 3 OF 18



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North American Datum of 1983(NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

2		4
7	8	9

2 SPOT
4 LYLES
7 WHITFIELD
8 CENTERVILLE
9 LITTLELOT

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TEXAS HOLLOW, TENNESSEE

7.5 MINUTE SERIES
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UNITED STATES
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HICKMAN COUNTY, TENNESSEE
LYLES QUADRANGLE
SHEET NUMBER 4 OF 18

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QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

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3 TEXAS HOLLOW
5 CRAIGFIELD
8 CENTERVILLE
9 LITTLELOT
10 PRIMM SPRINGS

LYLES, TENNESSEE
7.5 MINUTE SERIES
SHEET NUMBER 4 OF 18

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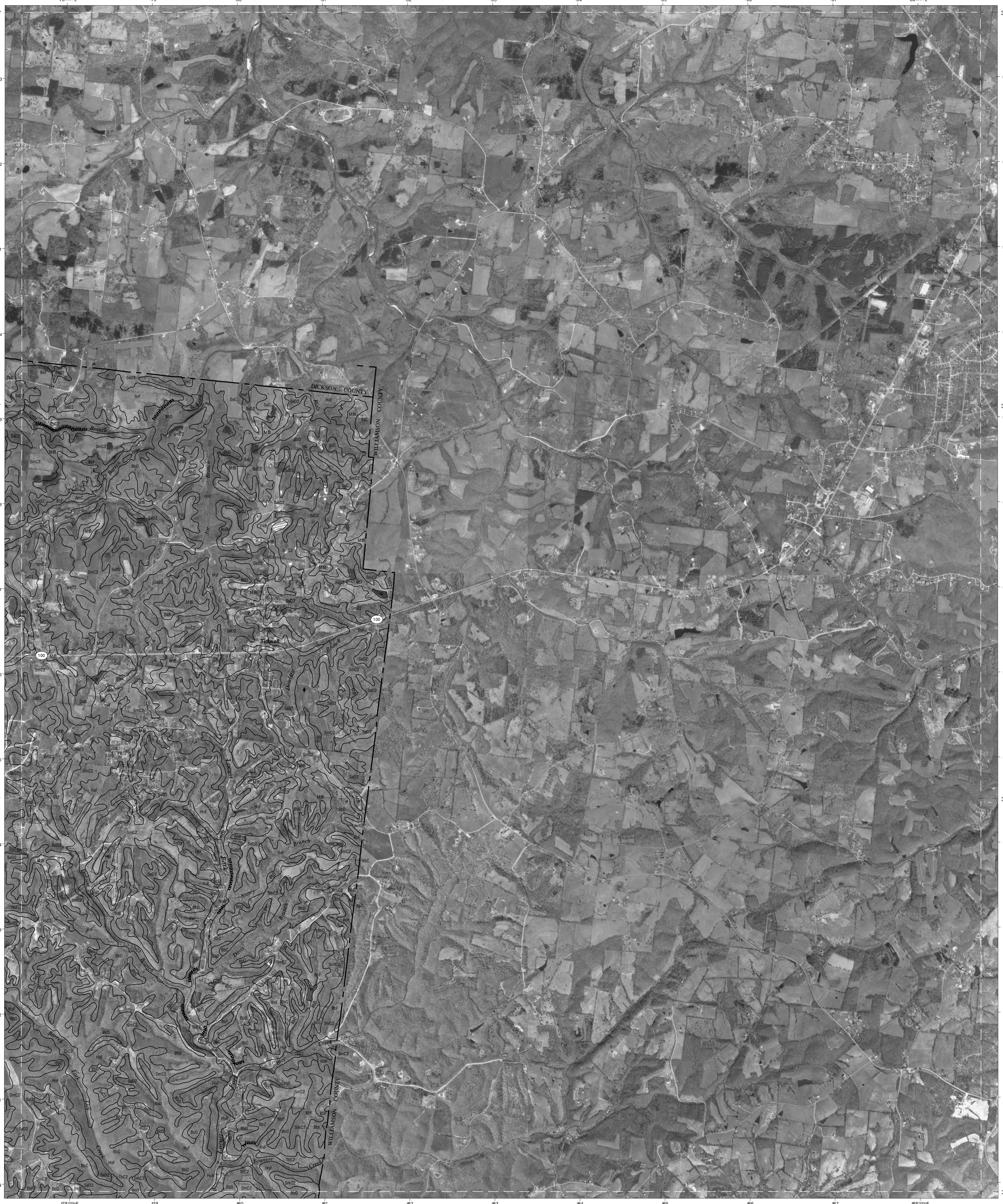
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
CRAIGFIELD QUADRANGLE
SHEET NUMBER 5 OF 18



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North American Datum of 1983(NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

INDEX TO ADJOINING 7.5 MAPS

4 LYLES
9 LITTLELOT
10 PRIMM SPRINGS

CRAIGFIELD, TENNESSEE
7.5 MINUTE SERIES
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UNITED STATES
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HICKMAN COUNTY, TENNESSEE
COBLE QUADRANGLE
SHEET NUMBER 6 OF 18

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North American Datum of 1983(NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

INDEX TO ADJOINING 7.5 MAPS

1 BUCKSNORT
2 SPOT
7 WHITFIELD
11 PLEASANTVILLE
12 BEAVERDAM SPRINGS

COBLE, TENNESSEE
7.5 MINUTE SERIES
SHEET NUMBER 6 OF 18

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
WHITFIELD QUADRANGLE
SHEET NUMBER 7 OF 18

Joins sheet 1, Bucksnort

Joins sheet 2, Spot

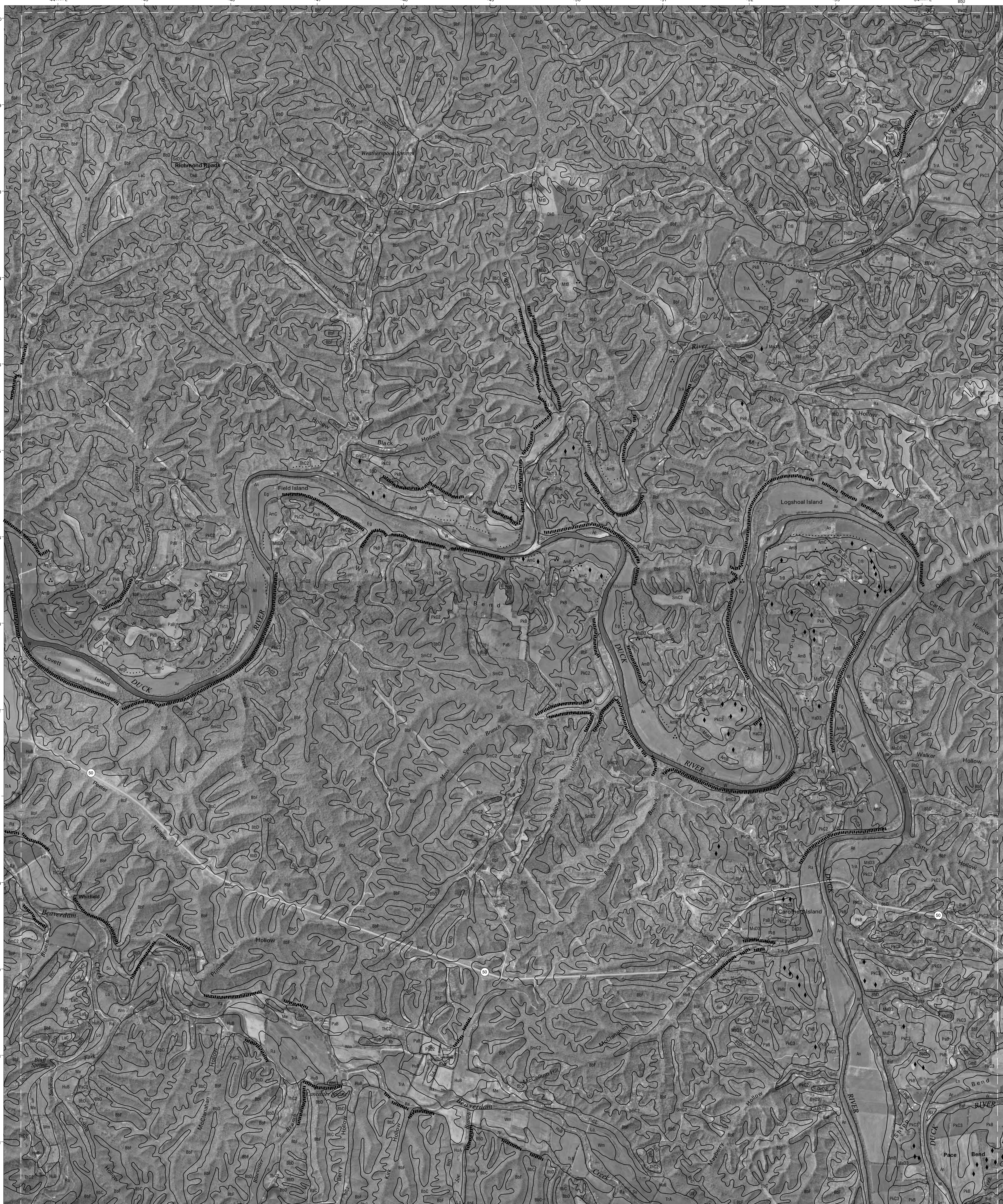
Joins sheet 3, Texas Hollow

87° 37′30″ 87° 35′00″ 87° 32′30″ 87° 30′00″

35° 52′30″ 35° 50′00″ 35° 47′30″ 35° 45′00″

Joins sheet 6, Coble

Joins sheet 8, Centerville



Joins sheet 11, Pleasantville

Joins sheet 12, Beaverdam Springs

Joins sheet 13, Sunrise

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

1	2	3	1 BUCKSNORT
			2 SPOT
			3 TEXAS HOLLOW
6		8	6 COBLE
			8 CENTERVILLE
11	12	13	11 PLEASANTVILLE
			12 BEAVERDAM SPRINGS
			13 SUNRISE

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WHITFIELD, TENNESSEE
7.5 MINUTE SERIES
SHEET NUMBER 7 OF 18

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
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HICKMAN COUNTY, TENNESSEE
CENTERVILLE QUADRANGLE
SHEET NUMBER 8 OF 18

Joins sheet 2, Spot

Joins sheet 3, Texas Hollow

Joins sheet 4, Lyles

Joins sheet 7, Whitfield

Joins sheet 9, Littlelot

Joins sheet 12, Beaverdam Springs

Joins sheet 13, Sunrise

Joins sheet 14, Greenfield Bend

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North American Datum of 1983(NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

2	3	4
7		9
12	13	14

2 SPOT
3 TEXAS HOLLOW
4 LYLES
7 WHITFIELD
9 LITTLELOT
12 BEAVERDAM SPRINGS
13 SUNRISE
14 GREENFIELD BEND

INDEX TO ADJOINING 7.5 MAPS

CENTERVILLE, TENNESSEE
7.5 MINUTE SERIES
SHEET NUMBER 8 OF 18

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

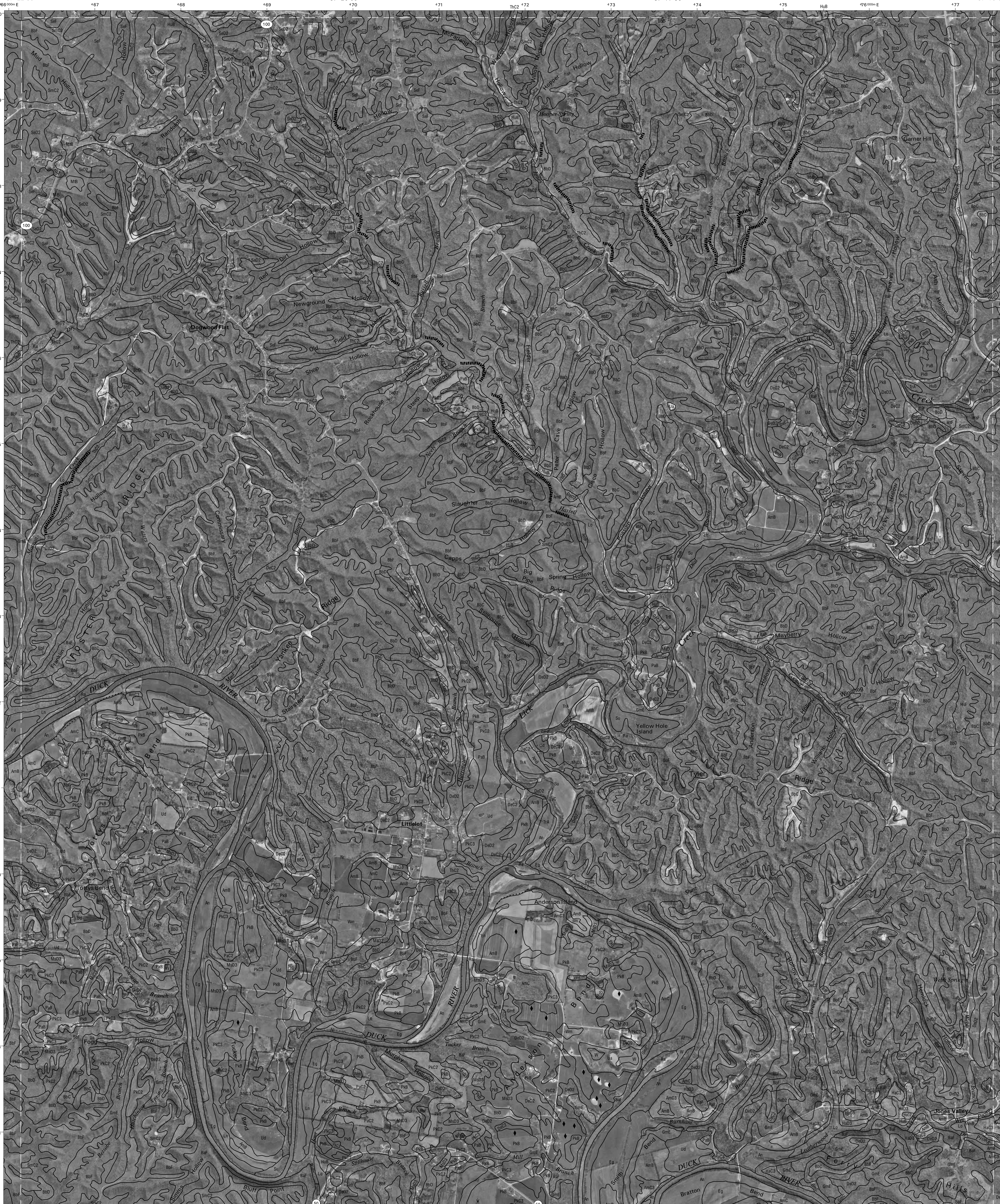
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
LITTLELOT QUADRANGLE
SHEET NUMBER 9 OF 18

Joins sheet 3, Texas Hollow

Joins sheet 4, Lyles

Joins sheet 5, Craigfield



Joins sheet 8, Centerville

Joins sheet 10, Primm Springs

Joins sheet 13, Sunrise

Joins sheet 14, Greenfield Bend

Joins sheet 15, Williamsport

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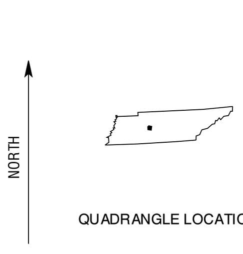
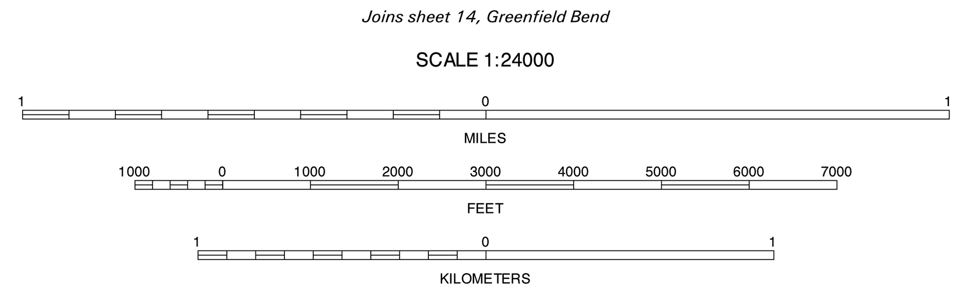


QUADRANGLE LOCATION

SCALE 1:24000



3	4	5
8		10
13	14	15

3 TEXAS HOLLOW
4 LYLES
5 CRAIGFIELD
8 CENTERVILLE
10 PRIMM SPRINGS
13 SUNRISE
14 GREENFIELD BEND
15 WILLIAMSPORT

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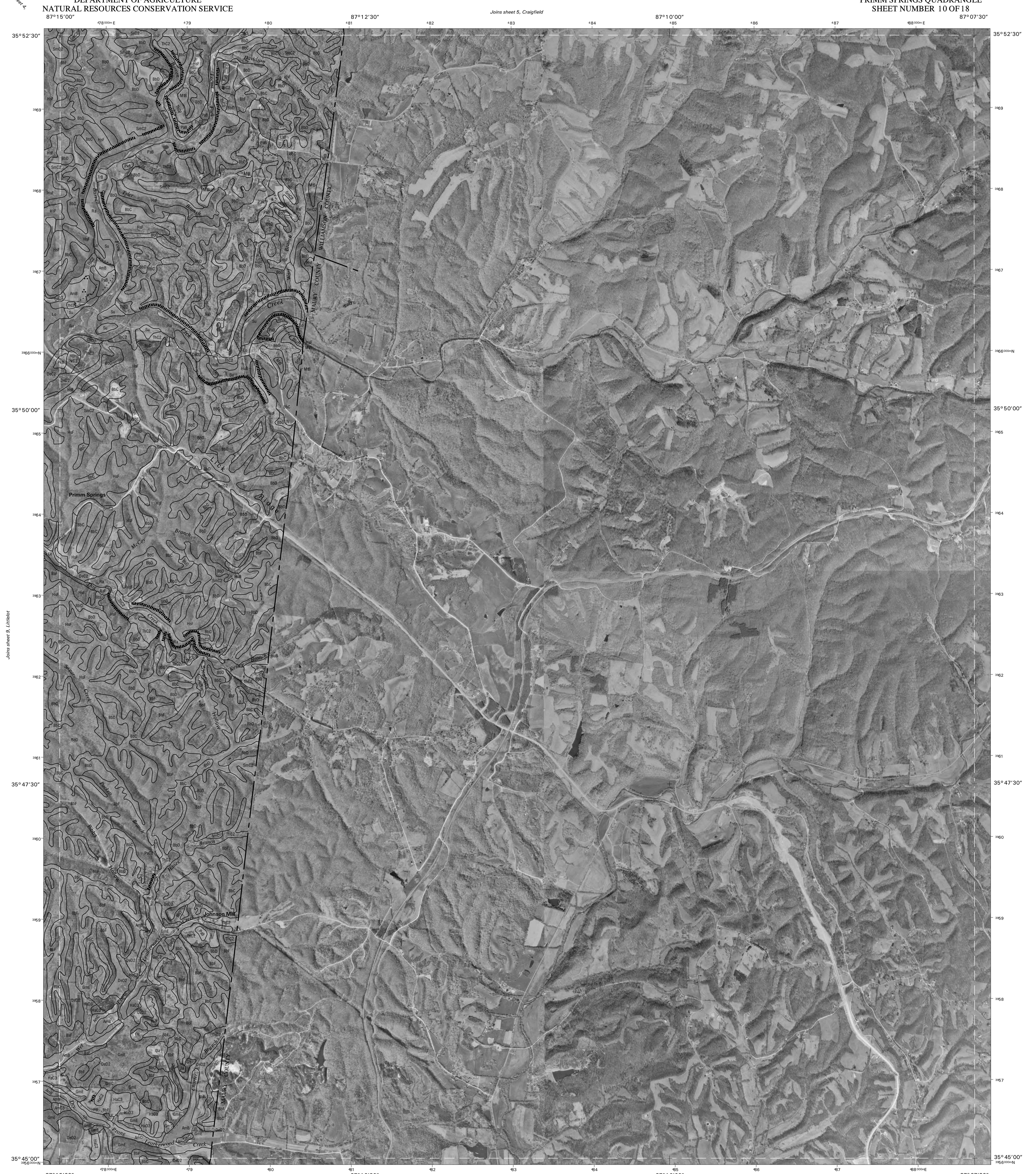
LITTLELOT, TENNESSEE
7.5 MINUTE SERIES
SHEET NUMBER 9 OF 18

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
PRIMM SPRINGS QUADRANGLE
SHEET NUMBER 10 OF 18



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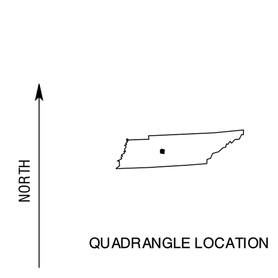
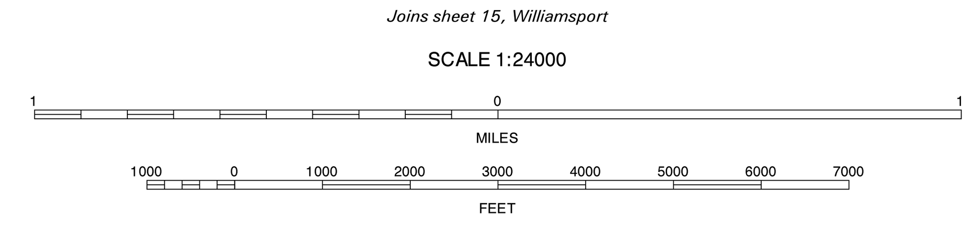


QUADRANGLE LOCATION

SCALE 1:24000



4	5	
9		
14	15	

4 LYLES
5 CRAIGFIELD
9 LITTLELOT
14 GREENFIELD BEND
15 WILLIAMSPORT

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PRIMM SPRINGS, TENNESSEE
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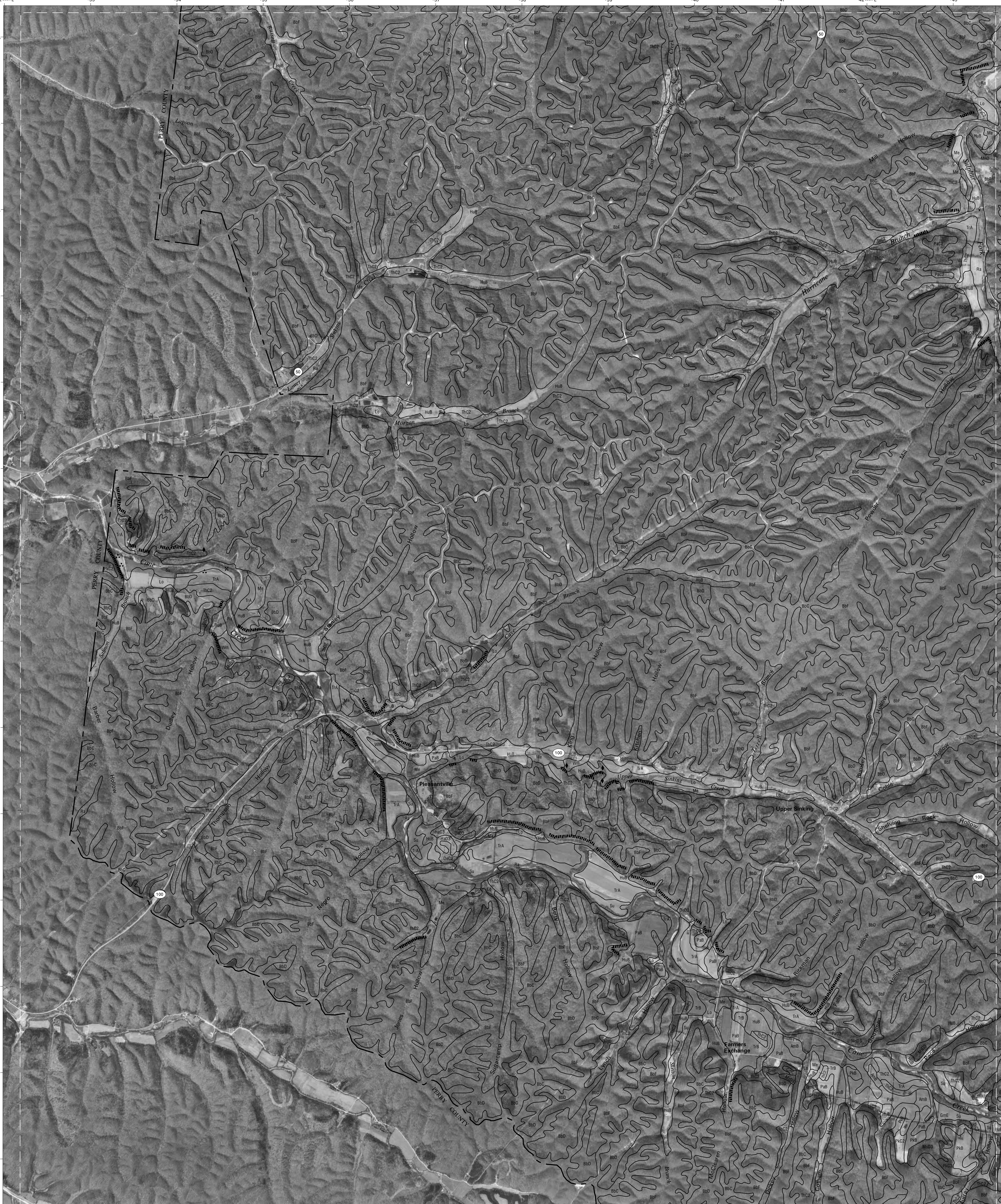
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
PLEASANTVILLE QUADRANGLE
SHEET NUMBER 11 OF 18



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

	6	7	
	■	12	
	16	17	

6 COBLE
7 WHITFIELD
12 BEAVERDAM SPRINGS
16 GRAVES SPRING
17 HOHENWALD

INDEX TO ADJOINING 7.5 MAPS

PLEASANTVILLE, TENNESSEE
7.5 MINUTE SERIES
SHEET NUMBER 11 OF 18

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
BEAVERDAM SPRINGS QUADRANGLE
SHEET NUMBER 12 OF 18

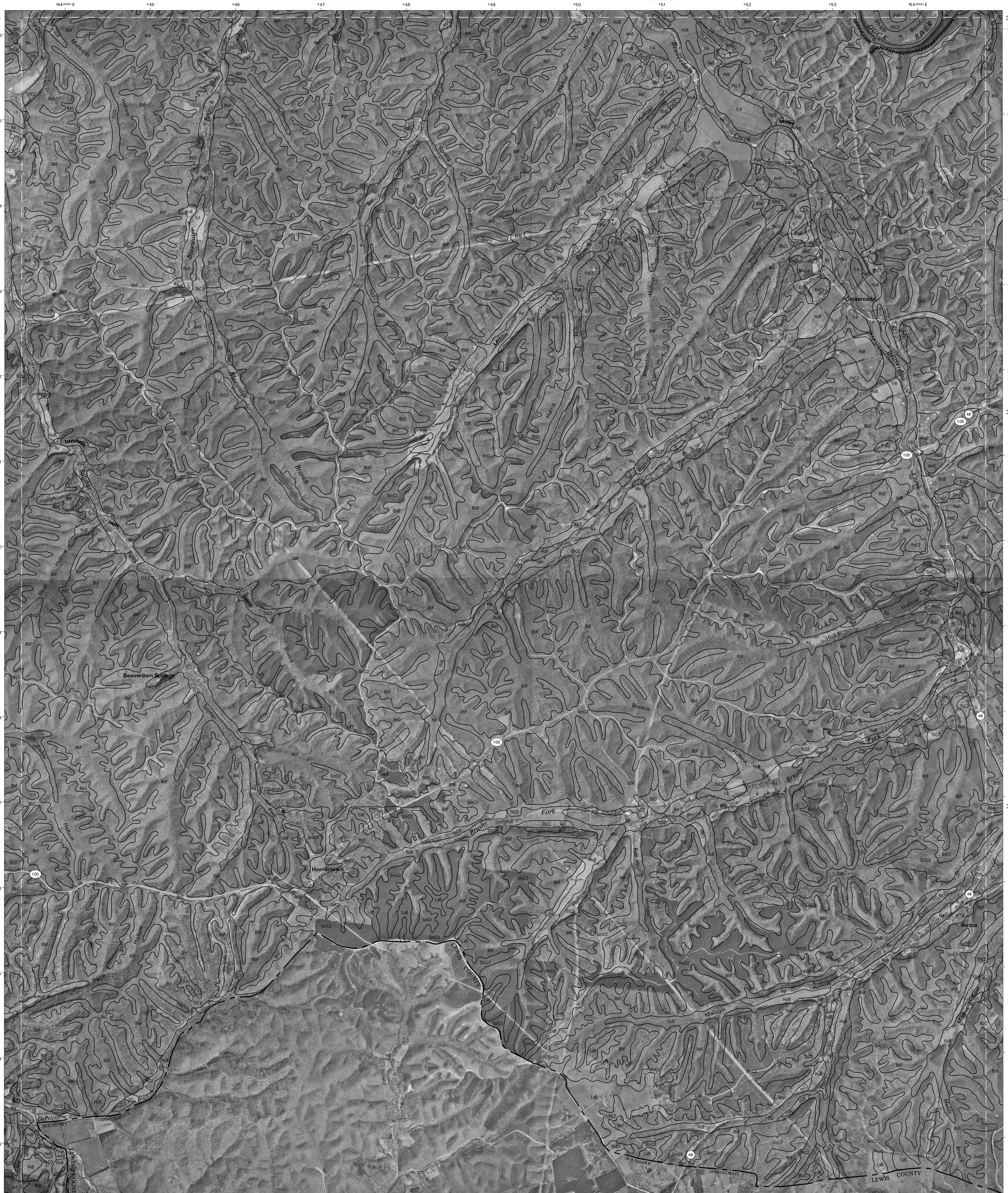
Joins sheet 6, Coble

Joins sheet 7, Whitfield

Joins sheet 8, Centerville

87° 37′30″ 87° 35′00″ 87° 32′30″ 87° 30′00″

35° 45′00″



35° 37′30″

87° 37′30″ 87° 35′00″ 87° 32′30″ 87° 30′00″

Joins sheet 11, Pleasantville

Joins sheet 13, Sunrise

Joins sheet 16, Graves Spring

Joins sheet 17, Hohenwald

Joins sheet 18, Gordonsburg

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

6	7	8
11		13
16	17	18

6 COBLE
7 WHITFIELD
8 CENTERVILLE
11 PLEASANTVILLE
13 SUNRISE
16 GRAVES SPRING
17 HOHENWALD
18 GORDONSBURG

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BEAVERDAM SPRINGS, TENNESSEE
7.5 MINUTE SERIES
SHEET NUMBER 12 OF 18

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UNITED STATES
DEPARTMENT OF AGRICULTURE
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HICKMAN COUNTY, TENNESSEE
SUNRISE QUADRANGLE
SHEET NUMBER 13 OF 18

Joins sheet 7, Whitfield

Joins sheet 8, Centerville

Joins sheet 9, Littlelot

87° 30′00″ | 87° 27′30″ | 87° 25′00″ | 87° 22′30″

35° 45′00″

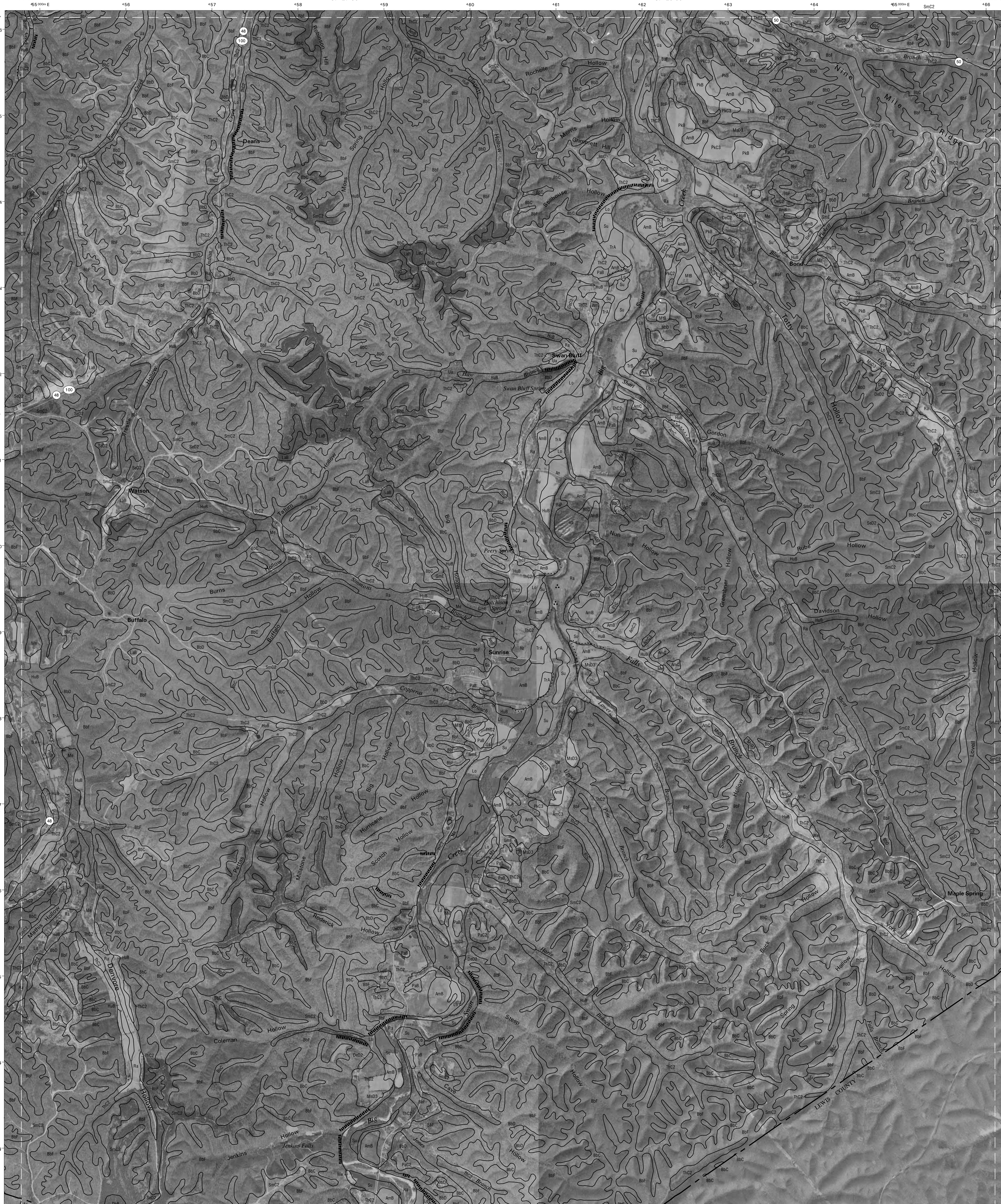
35° 42′30″

35° 40′00″

35° 37′30″

Joins sheet 12, Beaverdam Springs

Joins sheet 14, Greenfield Bend



87° 30′00″ | 87° 27′30″ | 87° 25′00″ | 87° 22′30″

Joins sheet 18, Gordonsburg

Joins sheet 17, Hohenwald

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

7	8	9
12		14
17	18	

7 WHITFIELD
8 CENTERVILLE
9 LITTLELOT
12 BEAVERDAM SPRINGS
14 GREENFIELD BEND
17 HOHENWALD
18 GORDONSBURG

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SUNRISE, TENNESSEE
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UNITED STATES
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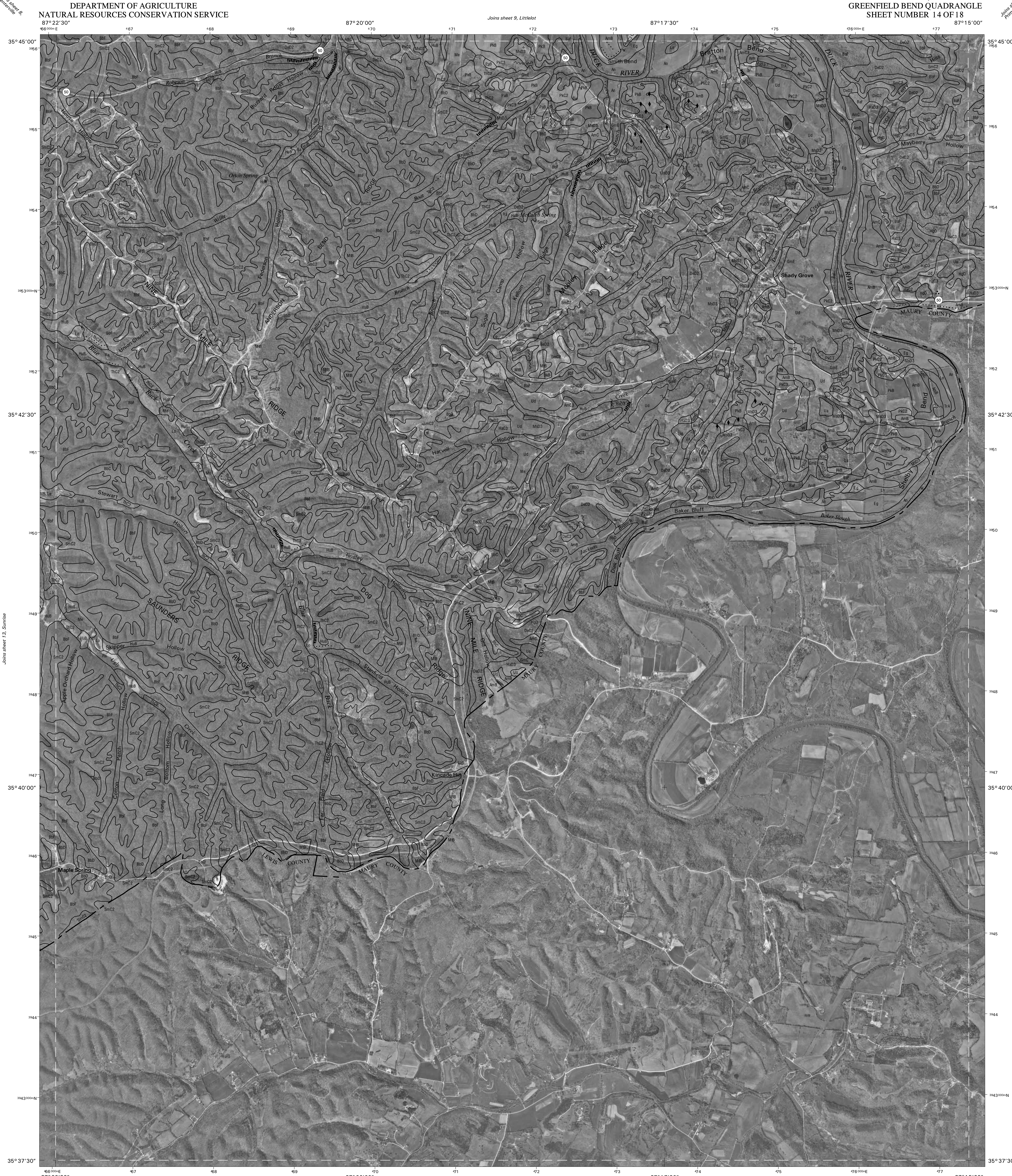
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
GREENFIELD BEND QUADRANGLE
SHEET NUMBER 14 OF 18



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North American Datum of 1983(NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

INDEX TO ADJOINING 7.5 MAPS

8 CENTERVILLE
9 LITTLELOT
10 PRIMM SPRINGS
13 SUNRISE
15 WILLIAMSPORT
18 GORDONSBURG

GREENFIELD BEND, TENNESSEE
7.5 MINUTE SERIES
SHEET NUMBER 14 OF 18

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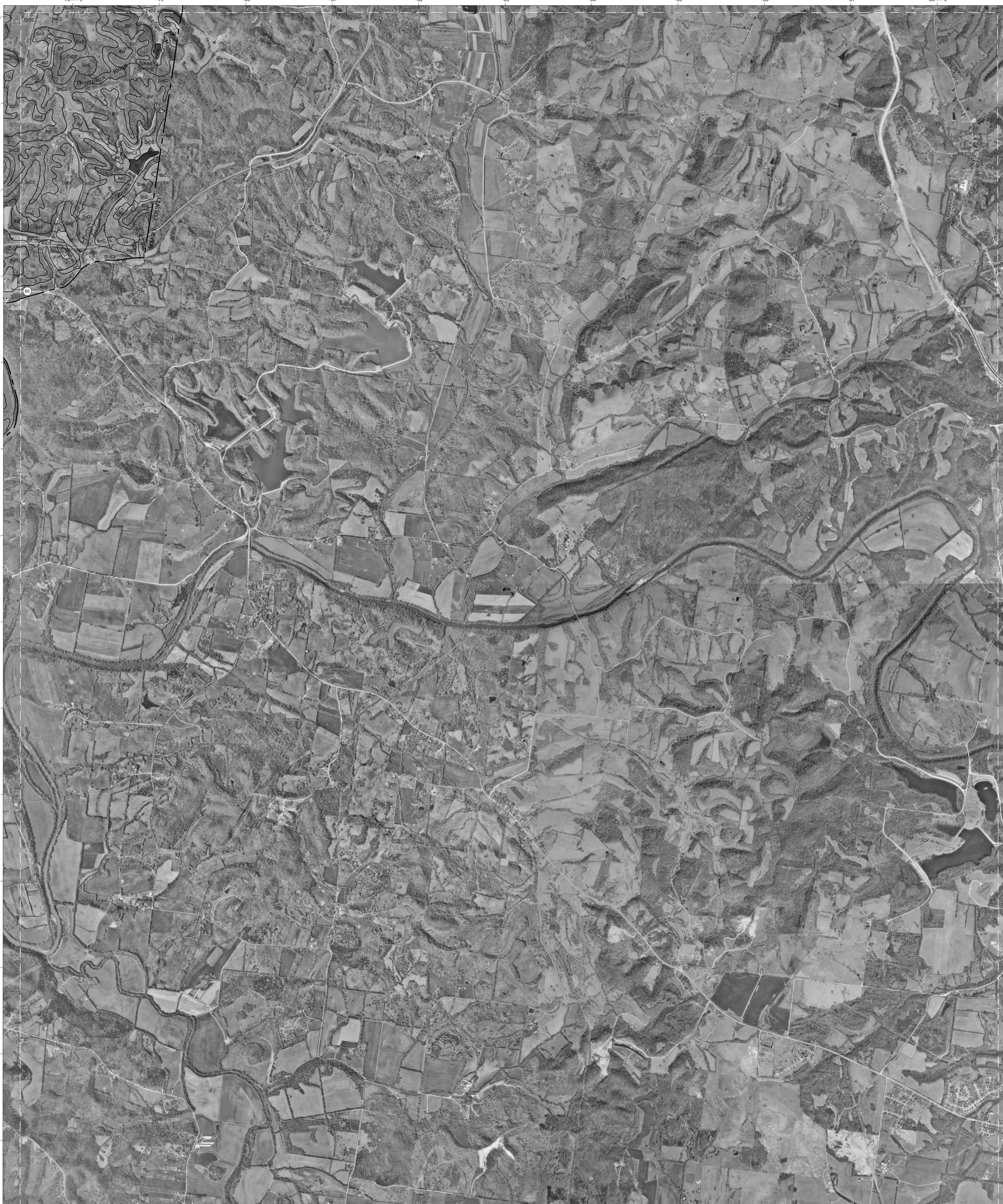
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
WILLIAMSPORT QUADRANGLE
SHEET NUMBER 15 OF 18



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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

9 LITTLELOT
10 PRIMM SPRINGS
14 GREENFIELD BEND

INDEX TO ADJOINING 7.5 MAPS

WILLIAMSPORT, TENNESSEE
7.5 MINUTE SERIES
SHEET NUMBER 15 OF 18

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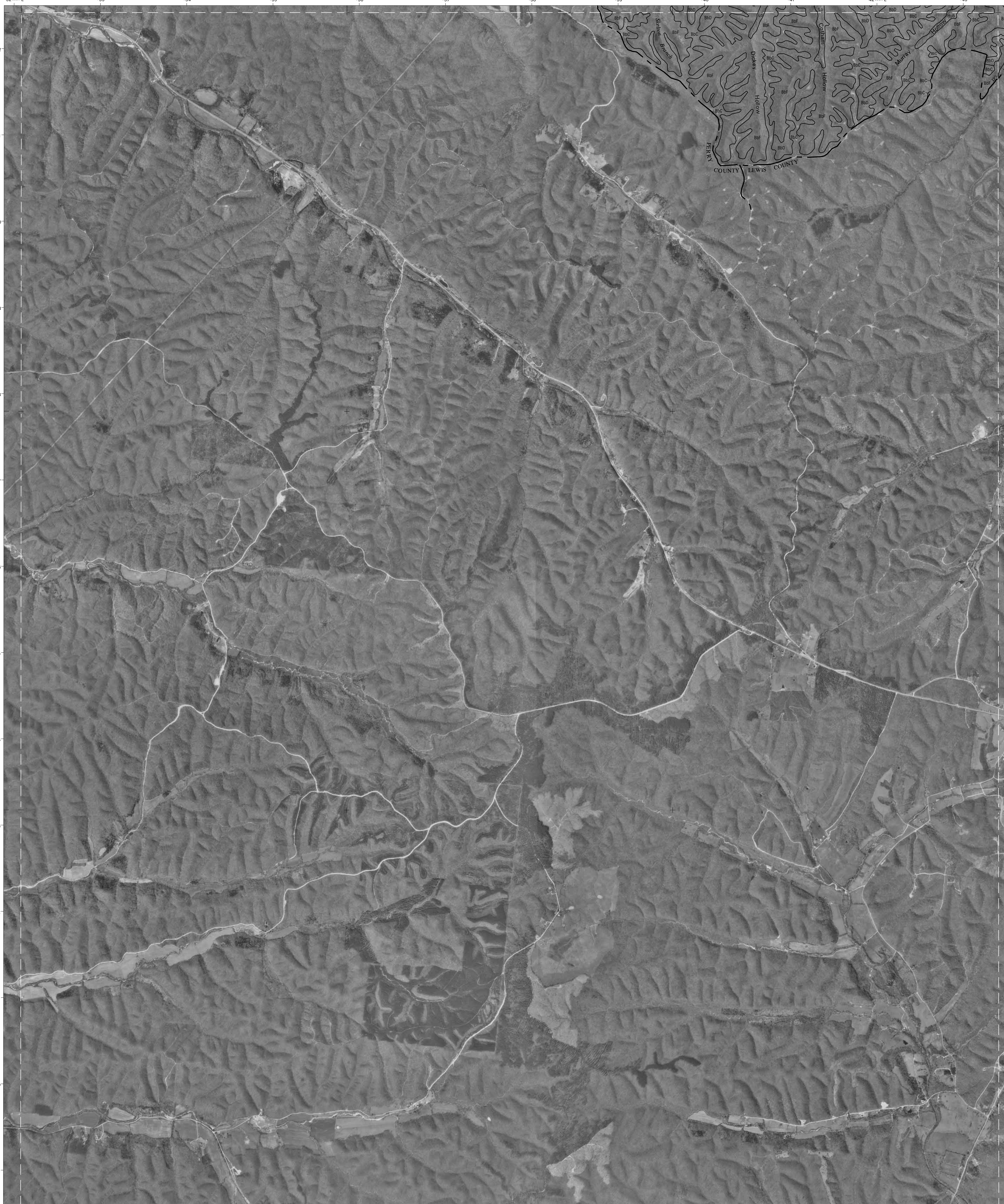
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HICKMAN COUNTY, TENNESSEE
GRAVES SPRING QUADRANGLE
SHEET NUMBER 16 OF 18



SCALE 1:24000

MILES

FEET

KILOMETERS

NORTH

QUADRANGLE LOCATION

		11	12
			17

11 PLEASANTVILLE
12 BEAVERDAM SPRINGS
17 HOHENWALD

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GRAVES SPRING, TENNESSEE
7.5 MINUTE SERIES
SHEET NUMBER 16 OF 18

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

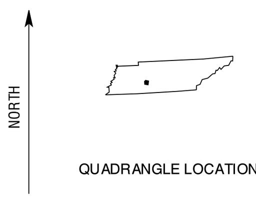
HICKMAN COUNTY, TENNESSEE
HOHENWALD QUADRANGLE
SHEET NUMBER 17 OF 18

SCALE 1:24000

MILES

FEET

KILOMETERS



QUADRANGLE LOCATION

11	12	13
16		18

11 PLEASANTVILLE
12 BEAVERDAM SPRINGS
13 SUNRISE
16 GRAVES SPRING
18 GORDONSBURG

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North American Datum of 1983(NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

HOHENWALD, TENNESSEE

7.5 MINUTE SERIES
SHEET NUMBER 17 OF 18

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

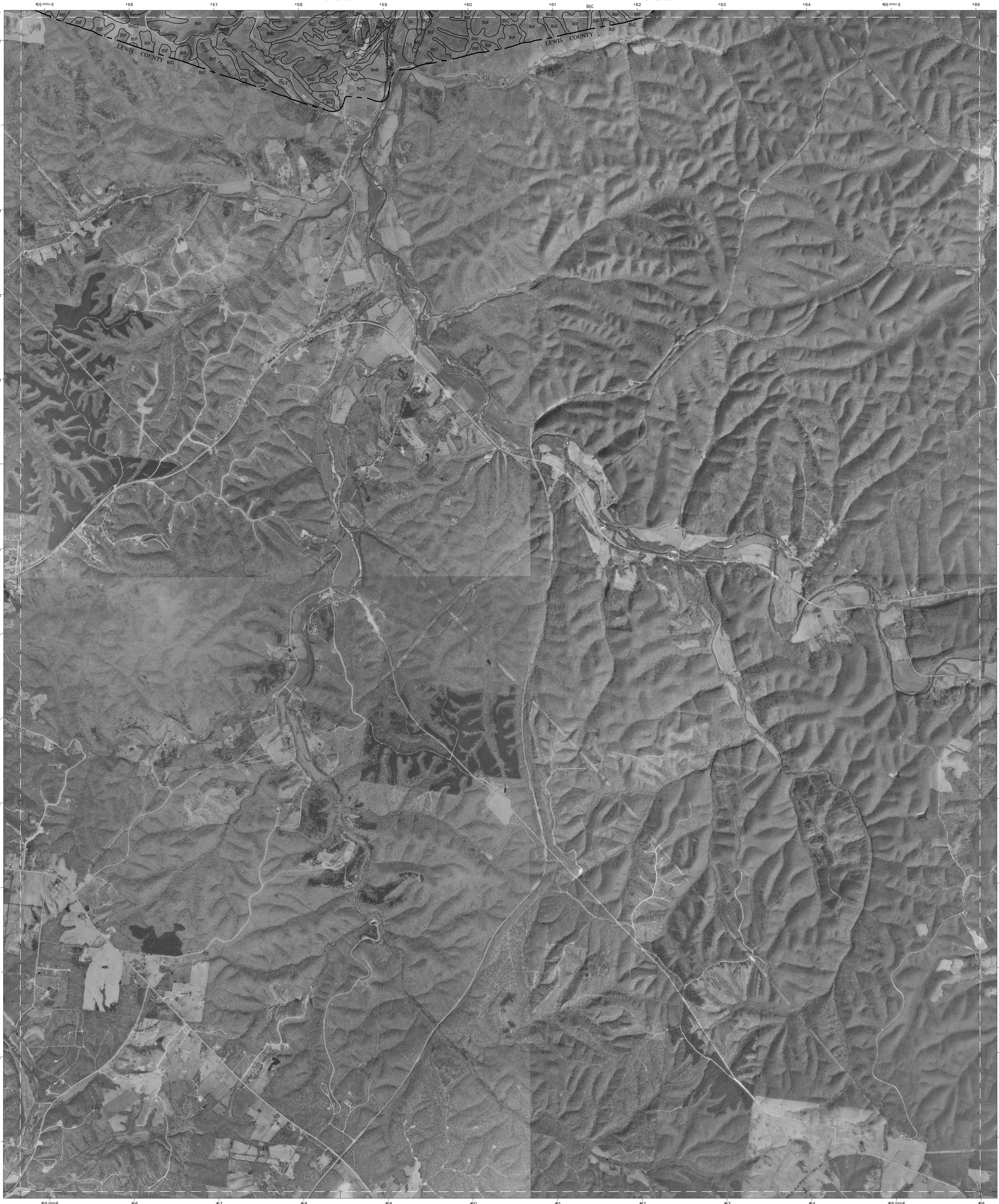
HICKMAN COUNTY, TENNESSEE
GORDONSBURG QUADRANGLE
SHEET NUMBER 18 OF 18

Joins sheet 12, Beaverdam Springs

Joins sheet 13, Sunrise

Joins sheet 14, Greenfield Bend

Joins sheet 17, Hohenwald



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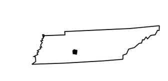
North American Datum of 1983(NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 16. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

12	13	14
17		

12 BEAVERDAM SPRINGS
13 SUNRISE
14 GREENFIELD BEND
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Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.